ICE ONE DOLLAR PASSENGER PROGRESS ANNUAL Editorial Contents, page 135

NOVEMBER 16, 1946

Railway Age

Founded in 1856

29943

5 Copy 1 46

1946 PARADE OF THE VETERANS

Five Years Without a Day Off

Over a million miles in heavy duty fast passenger service with 100 per cent availability.

THE Southern Railway System finally called in Locomotive No. 2900 for a major overhaul not long ago. But they didn't do it until that locomotive had set up a record for length of time in continuous service and 100 per cent availability that is likely to stand for quite awhile.

Here's what this 4000 horsepower General Motors Passenger Diesel did: Between May, 1941 and July 27, 1946 it hauled the Tennessean 1,077,588 miles with 100% availability. This record of dependability was set in daily operation in and about the Tennessee Mountains with an average of 13.3 cars.

Because of records like this, General Motors Diesels are looked upon as outstanding for dependability. They have set new standards for availability and for low operation and maintenance costs.

This is no accident. For General Motors Diesels are engineered and built by men who pioneered the application of Diesel power to main line train propulsion and have specialized in Diesel motive power ever since.

Locomotive No. 2901, General Motors Diesel powering the opposite Tennessean, was operated more than five years with an availability of 99.6%. No mileage was missed because of mechanical trouble.

VETERANS IN PERFORMANCE

GENERAL MOTORS LOCOMOTIVES

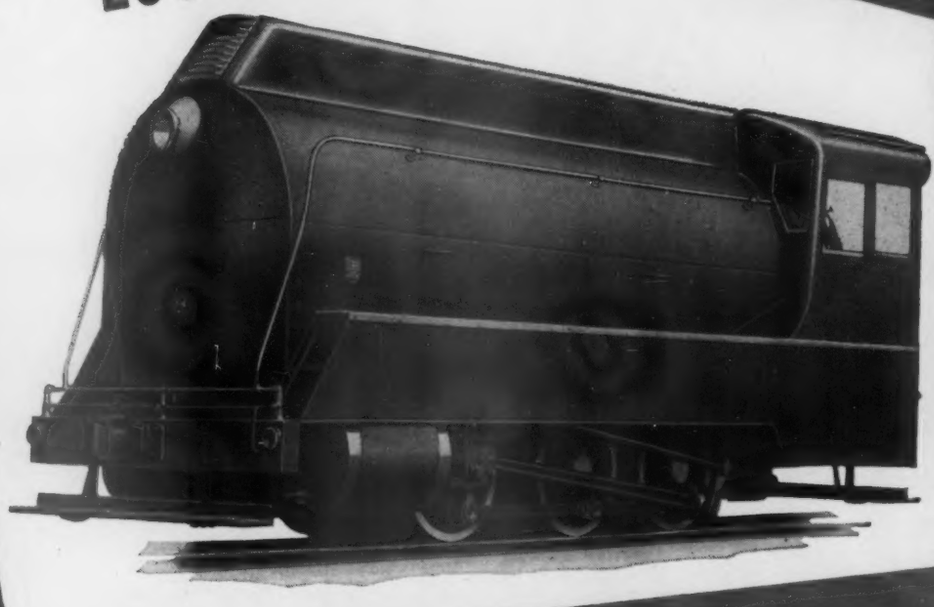
YOUTHFUL IN STAYING POWER

ELECTRO-MOTIVE DIVISION

GENERAL MOTORS LA GRANGE, ILL.

PORTER FIRELESS LOCOMOTIVES

NO FIRE · NO SMOKE · NO NOISE



The most economical and trouble-free locomotive ever built

Economical because it runs on excess steam from your plant boilers, because it can be operated by unskilled, low-cost labor, and because it requires very little maintenance. Trouble-free because of the simplicity of its construction. There is no boiler, fire-box, electric motor, generator, or internal combustion engine on a Porter Fireless. There are few working parts, and the reservoir never needs replacement. Actual experience shows that users of Porter Fireless Locomotives save up to 50% of their switching costs.

PORTER Equipment

PORTER LOCOMOTIVES: Diesel, Diesel-Electric, Steam and Fireless Steam

AMERICAN-FORT PITT SPRINGS: Coil and Elliptic Springs for Railroad Equipment

DEVINE IMPREGNATORS: Vacuum-Pressure Equipment for Impregnating Ties, Timbers, and Electrical Windings

H. K. PORTER COMPANY, Inc.
PITTSBURGH, PENNSYLVANIA
DISTRICT OFFICES IN PRINCIPAL CITIES

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MINER

CLASS L-4
LOCKING PIN

The MINER CLASS L-4 SAFETY LOCKING PIN securely locks the trucks to the body of the car. Keeping the trucks under the cars is known to prevent telescoping in the event of collision, and, should derailment occur, the lower center of gravity of the car with locked trucks materially lessens the danger of overturning.

CLASS A-4-XB
DRAFT GEAR

The MINER CLASS A-4-XB DRAFT GEAR is recommended for modern, light passenger cars and meets the demand for minimum weight without sacrificing capacity, smooth action, endurance or column strength. Vibration and surging at varying speeds of trains are prevented by the instantaneous reactivity of the initial spring movement throughout its range of capacity.

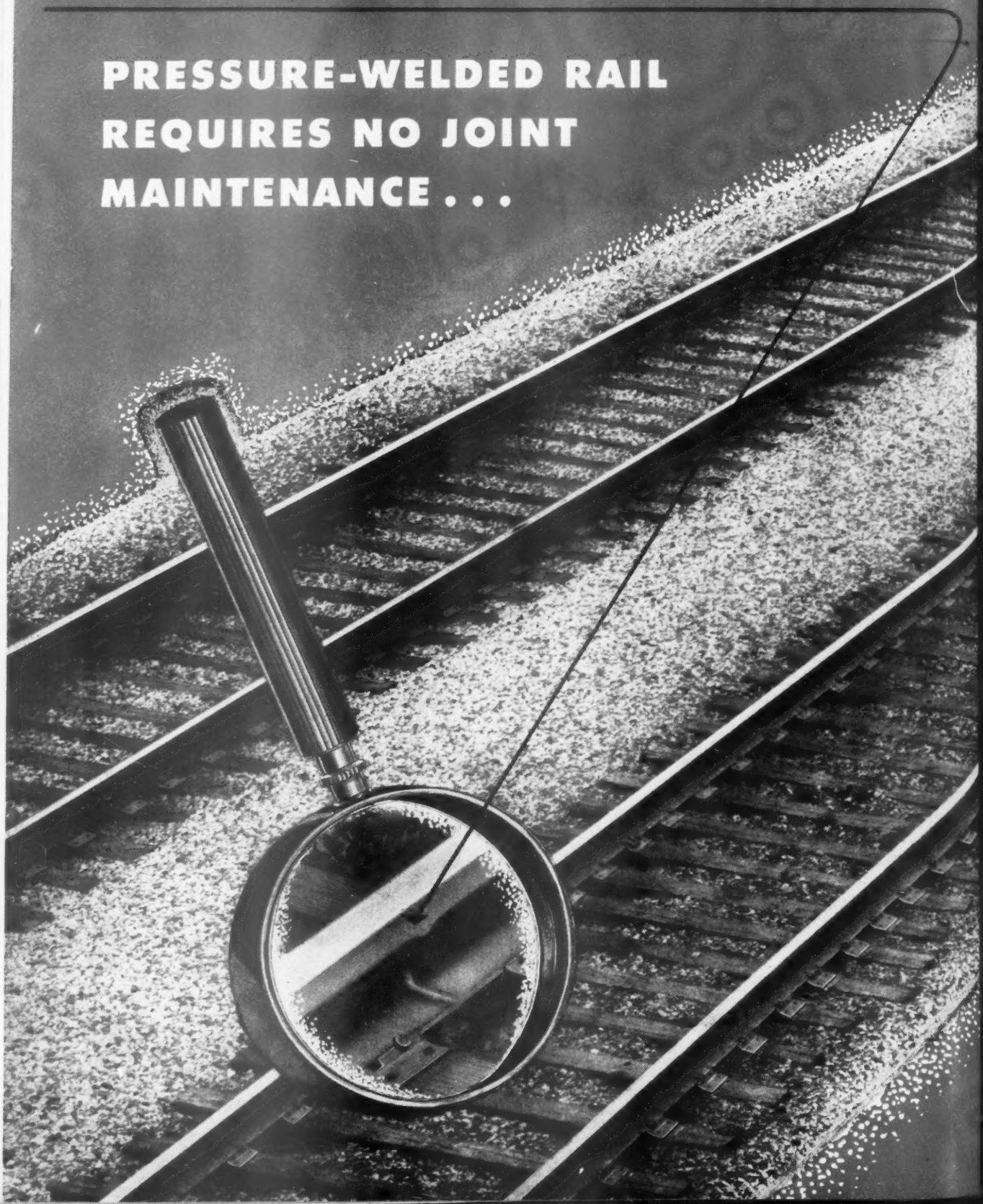
The MINER CLASS B-18-X BUFFER in combination with the A-4-XB gear provides ample resilience for efficient and smooth operation of passenger trains. The high capacity of the buffer supplements the draft gear action in protecting long shank couplers and car structure when cars are subjected to extreme buffing stresses.

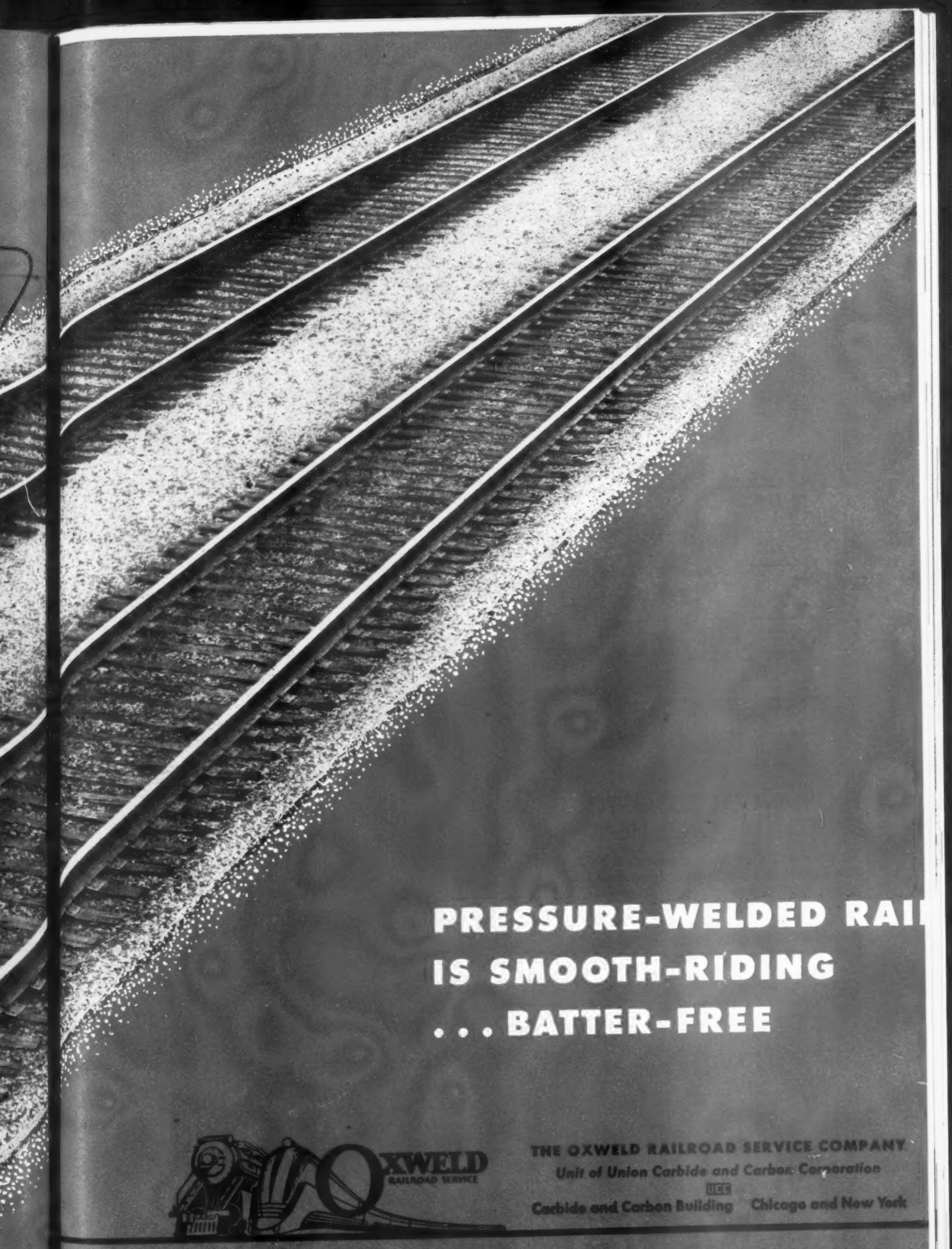
CLASS B-18-X
BUFFER

W. H. MINER, INC.
CHICAGO

This rail connection won't wear out . . .

PRESSURE-WELDED RAIL REQUIRES NO JOINT MAINTENANCE . . .





OXWELD RAILROAD SERVICE

THE OXWELD RAILROAD SERVICE COMPANY
Unit of Union Carbide and Carbon Corporation
UCC
Carbide and Carbon Building Chicago and New York

SINCE 1912—THE COMPLETE OXY-ACETYLENE SERVICE FOR AMERICAN RAILROADS

SPEED takes a lot

BLOCK

FORGED BLOOM

FORGED BLANK

ROLLED WHEEL

DISHED WHEEL

FROM INGOT BLOCK TO WHEEL IN ONE HEAT

To the eye, steel wheels are much alike, but Edgewater's single heat forging and rolling process explains why Edgewater wheels are better. Thorough working of the metal with no re-heating interval is the answer. The grain structure is undisturbed; grows more compact with each operation.

EDGEWATER STEEL COMPANY · PITTSBURGH, PA.

a lot
GH, PA.
RAILWAY AGE

out of wheels — so

EDGEWATER

puts in more durability

THE punishing speeds of today's faster trains demand the utmost in wheel durability. Edgewater's practice of quality-controlling every operation produces wheels of clean, strong steel with the improved physical properties and metallurgical qualities necessary to meet such needs.

The benefit of these careful processes, as applied in the making of Edgewater Rolled Steel Wheels, is demonstrated by added safety and extra mileage in high-speed service.

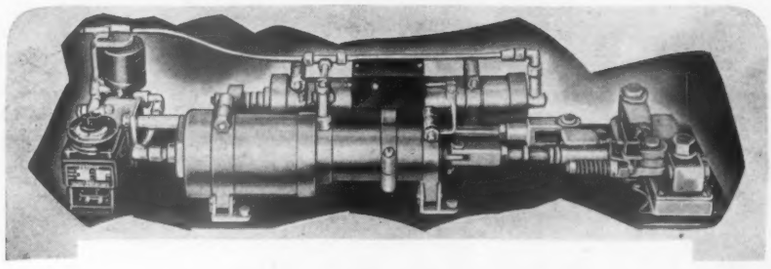
Edgewater ROLLED STEEL WHEELS

for passenger cars locomotive and tender trucks

Atlanta, Ga. Baltimore, Md. Boston, Mass. Chicago, Ill. Cleveland, O. Kansas City, Mo. Louisville, Ky. New York, N.Y. Philadelphia, Penna. St. Louis, Mo. St. Paul, Minn. San Francisco, Calif. Seattle, Wash. Washington, D. C.

It's a L-O-N-G

• • • but it's easy to get to the diner, lounge or club car from any car in the train when all cars are equipped with • • •



Typical installation of N.P. End Door Operator in recess over end door of passenger car.

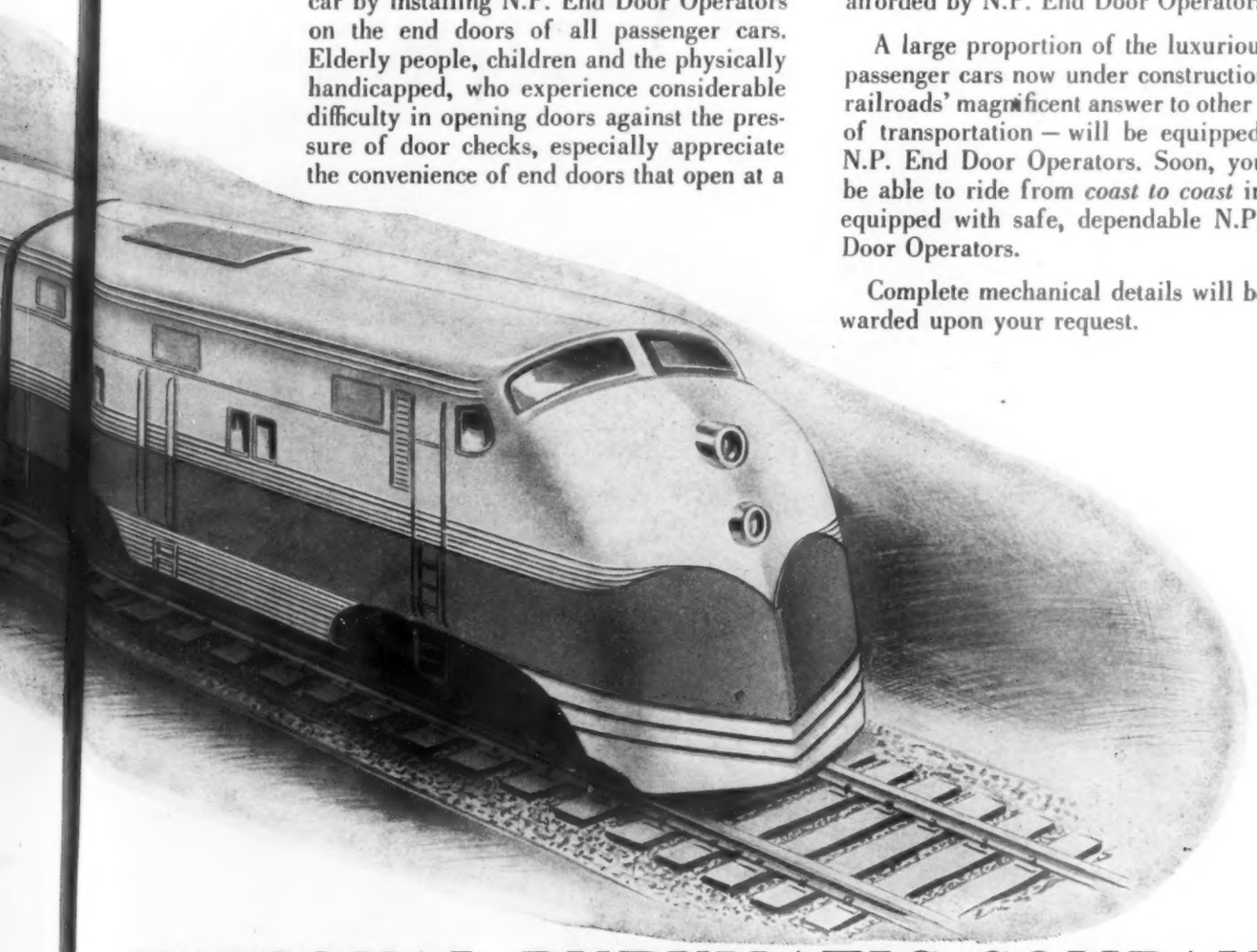
L-O-N-G *train*

NP End Door Operators

You can open up entire trains for the free movement of passengers from car to car by installing N.P. End Door Operators on the end doors of all passenger cars. Elderly people, children and the physically handicapped, who experience considerable difficulty in opening doors against the pressure of door checks, especially appreciate the convenience of end doors that open at a touch. In fact, *all* passengers appreciate the convenience and the elimination of effort afforded by N.P. End Door Operators.

A large proportion of the luxurious new passenger cars now under construction—the railroads' magnificent answer to other forms of transportation – will be equipped with N.P. End Door Operators. Soon, you will be able to ride from *coast to coast* in cars equipped with safe, dependable N.P. End Door Operators.

Complete mechanical details will be forwarded upon your request.



NATIONAL PNEUMATIC COMPANY

Graybar Bldg., New York • McCormick Bldg., Chicago • Rahway, New Jersey

WORLD'S LARGEST MANUFACTURER OF DOOR CONTROL EQUIPMENT FOR MASS TRANSPORTATION VEHICLES

For renewing the old

Plymetl FITS THE

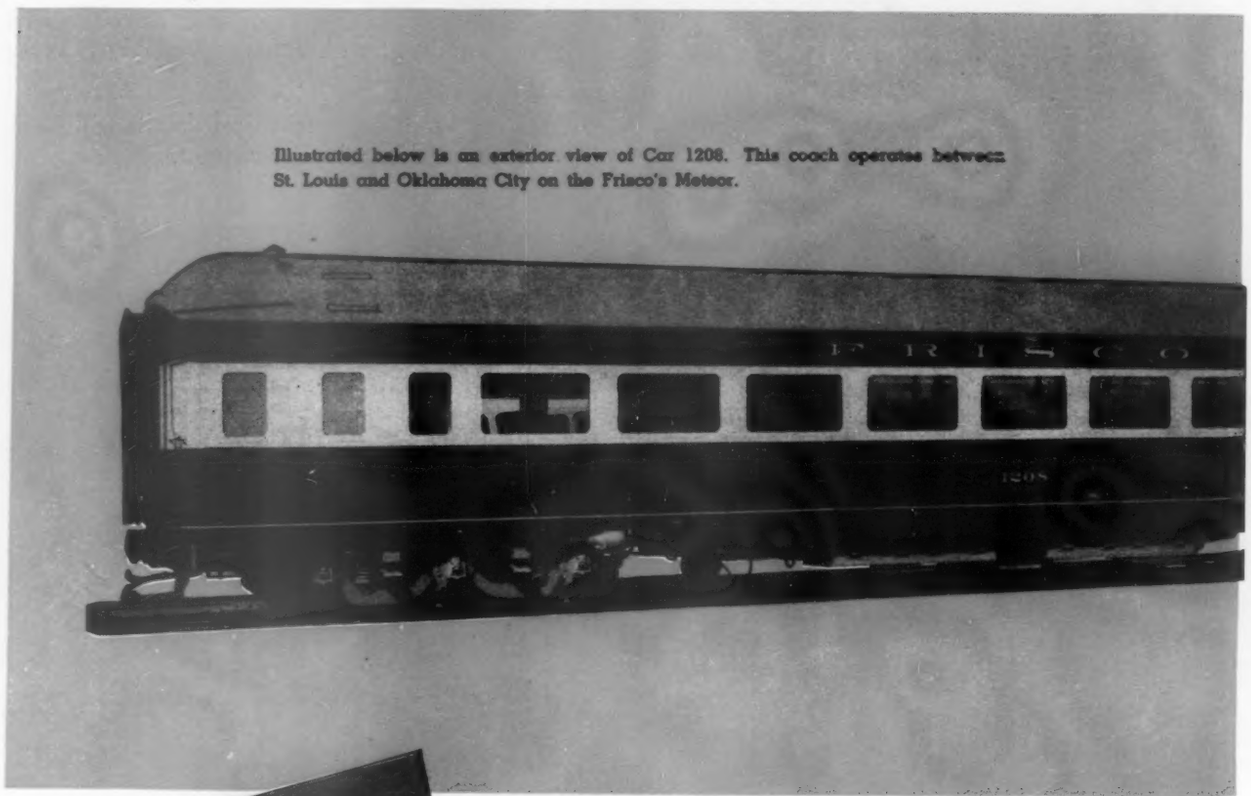
When the St. Louis-San Francisco Railway rebuilt cars 1203, 1207, 1208 and 1213, the inside finish was provided by Haskelite. PLYMETL was specified for doors (interior, end and vestibule); partitions, bulkheads, pier panels, upper and lower wainscoting, and end panels. Other Haskelite materials were specified for upper deck panels, air ducts and floors.

Frisco men estimate that in Car 1208 (illustrated) considerably more than 7500 pounds were saved by using Haskelite interior finish instead of hollow-steel partitions and paneling. Weight saved by Haskelite floor construction alone was 1400 pounds. And this weight saving was accomplished without sacrificing safety.

The "Frisco" railroad was so well pleased with the performance of Haskelite materials in the rebuilt cars that they have been specified for the same applications in 38 new streamlined cars now on order. The "Frisco" anticipates an equal or greater saving in weight in these new cars. In a 12 car train, this means a weight saving of more than 45 tons. Here, indeed, is proof of the "light touch" of PLYMETL.

PLYMETL — The metal-clad plywood.

Illustrated below is an exterior view of Car 1208. This coach operates between St. Louis and Oklahoma City on the Frisco's Meteor.



Write for *"Plan with Plymetl"*

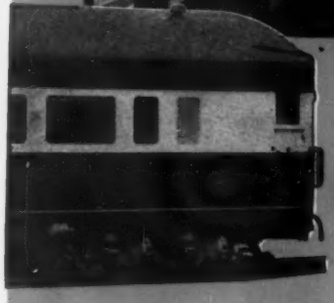
The new "Plan with Plymetl" catalog contains complete information on use, fabrication, fastening, and finishing of Plymetl. Write for your free copy today.

or building the new

PICTURE

The view below shows one end of the interior of Car 1208 with Plymetl bulkhead installed. Plymetl wainscoting and pier panels are in the process of installation.

The interior view above shows modern appearance of Car 1208. Note the smooth surface of the upper deck panels.



The other end of this car is pictured at the right. Plymetl bulkhead, pier panels and wainscoting illustrated.

HASKELITE MANUFACTURING CORPORATION

Department RR-12 **Grand Rapids 2, Michigan**

NEW YORK CHICAGO DETROIT CLEVELAND ST. LOUIS PHILADELPHIA LOS ANGELES

CANADA: Railway & Power Engineering Corporation, Ltd.

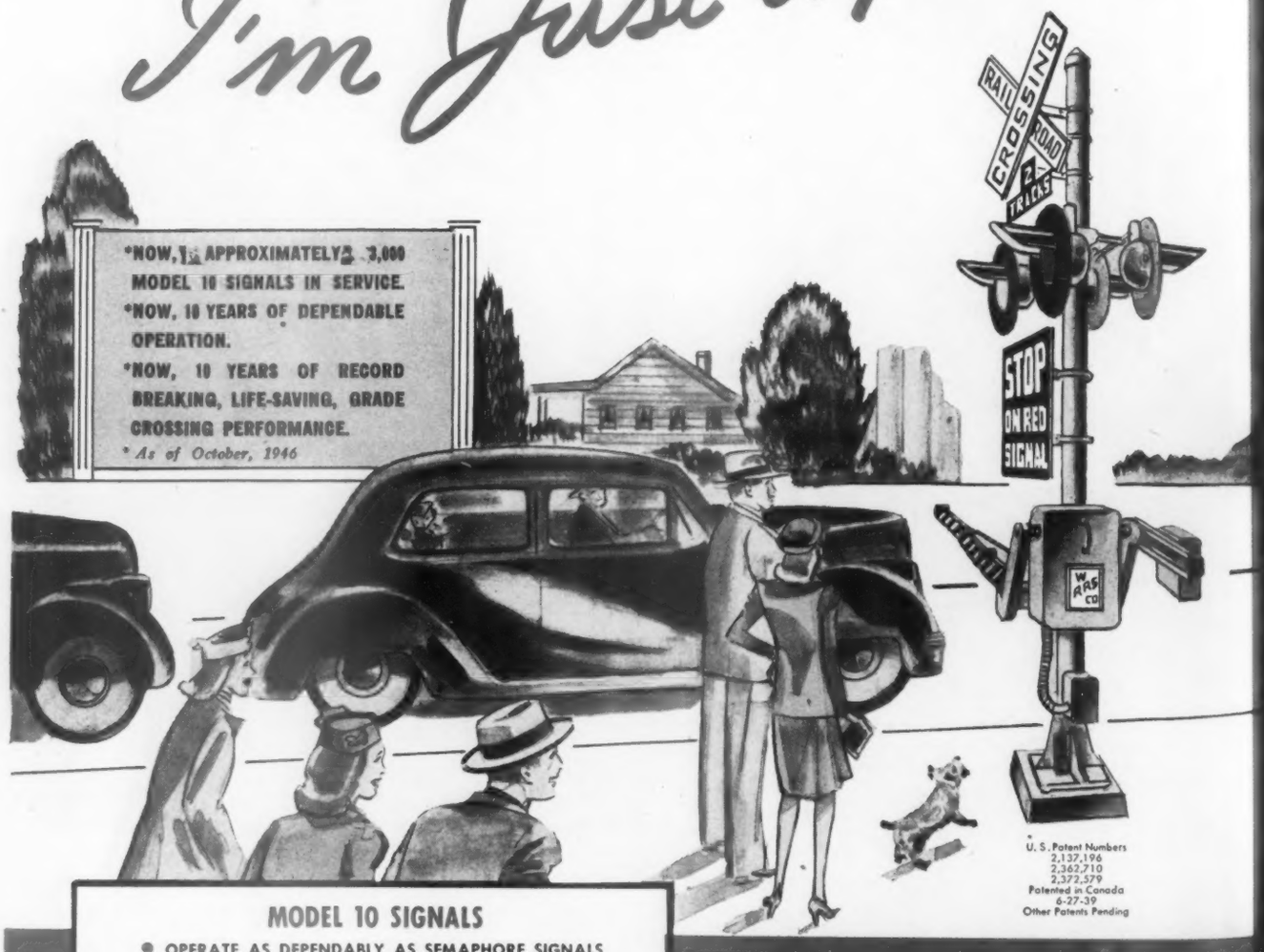
GEE, WHAT A CAB'S EYE VIEW.....

THE MODERN WAY

Model 10 HIGHWAY CROSSING SIGNALS

NOW WITH PROTECTION

I'm Just a Happy



*NOW, IN APPROXIMATELY 3,000 MODEL 10 SIGNALS IN SERVICE.

*NOW, 10 YEARS OF DEPENDABLE OPERATION.

*NOW, 10 YEARS OF RECORD BREAKING, LIFE-SAVING, GRADE CROSSING PERFORMANCE.

* *As of October, 1946*

* U. S. Patent Numbers 2,137,196 2,362,710 2,372,579 Patented in Canada 6-27-39 Other Patents Pending

MODEL 10 SIGNALS

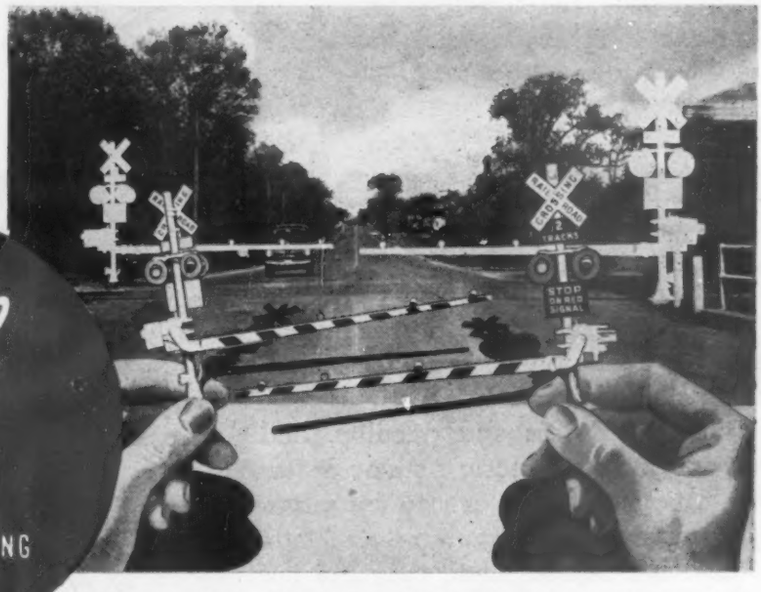
- OPERATE AS DEPENDABLY AS SEMAPHORE SIGNALS
- OPERATE AUTOMATICALLY
- OPERATE IN ANY WEATHER, ANY TEMPERATURE
- PERMIT HIGHER *TRAIN SPEEDS*
- PROVIDE SAFETY TO TRAIN AND HIGHWAY TRAFFIC

WESTERN

Write for Bulletin C-16 RAIL

WAS A TIME I
SHUDDERED WHEN
WE SPED PASSED THIS
CROSSING...

Engineer



THE MODERN WAY

Model
10
HIGHWAY CROSSING
SIGNALS

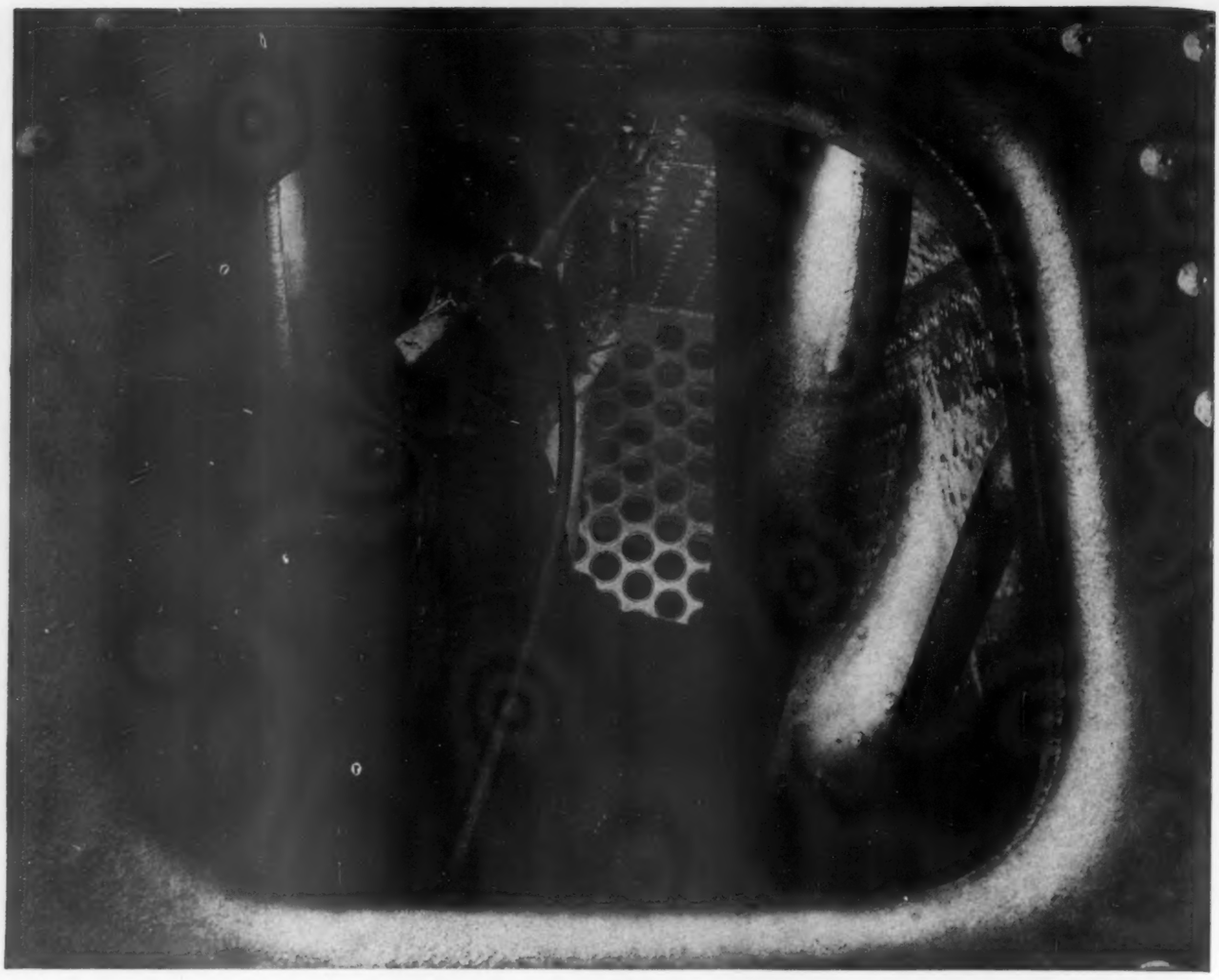
WILL FIT INTO *YOUR* MODERNIZATION PICTURE, TOO

MODEL 10 HIGHWAY CROSSING SIGNALS ARE A PRODUCT OF

RAILROAD SUPPLY CO.

Designers and Manufacturers of Safety Devices for Railroads

2406-2428 SOUTH ASHLAND AVENUE CHICAGO 8, ILLINOIS



Firebox Steel you can count on

If you want firebox steel that you can count on for outstanding performance in main-line service—even under today's gruelling schedules—use Bethloc Firebox Plates.

With their toughness and ductility, and uniformity of grain structure, Bethloc Plates resist the fatigue stresses caused by vibration and fluctuating temperatures. Made from special low-carbon steel, they are but slightly affected by aging. And they easily meet every railroad requirement for strength, elongation and elasticity.

Bethlehem also manufactures a complete range of steel plates for other railroad needs.

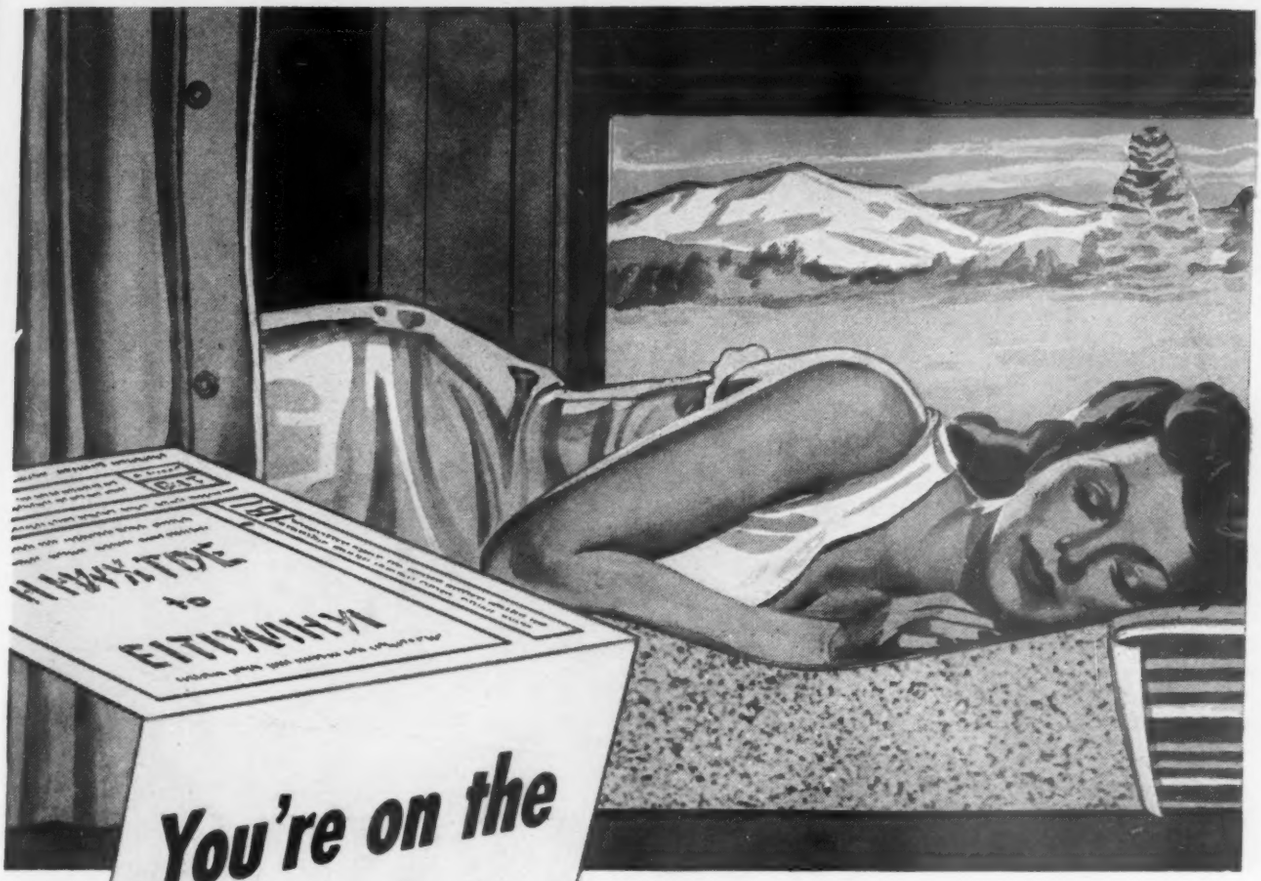
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

A Bethlehem Plate
for Every Railroad Need

In addition to Bethloc Firebox Plates, Bethlehem also makes steel plates for tenders, water tanks, passenger cars, freight cars, bridges and other railroad needs.

Bethloc BETHLEHEM STEEL
FIREBOX PLATES



You're on the right track

with Firestone FOAMEX* MATTRESSES

Listen to the Voice of Firestone Monday Evenings over NBC

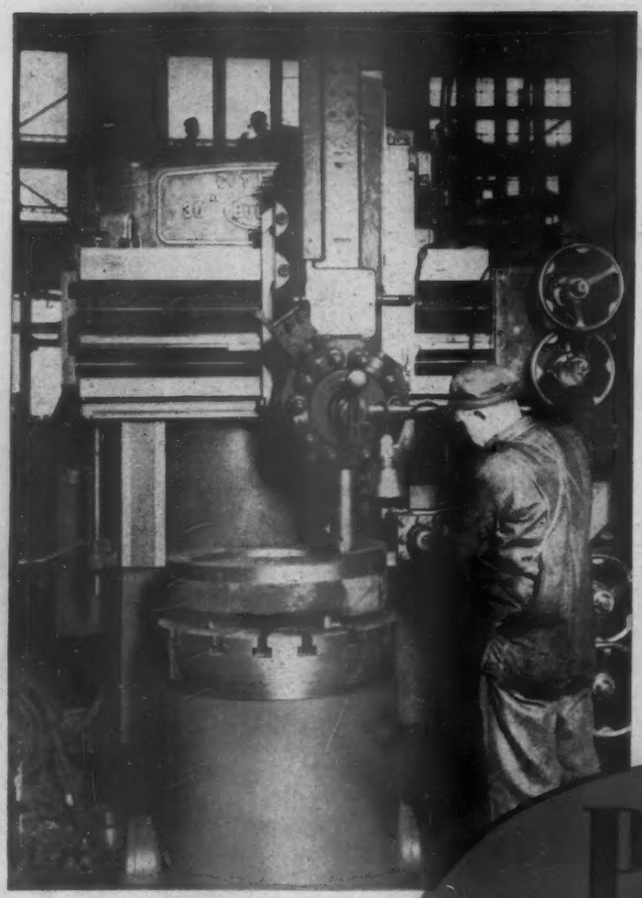
REST TODAY... STILL BETTER TOMORROW

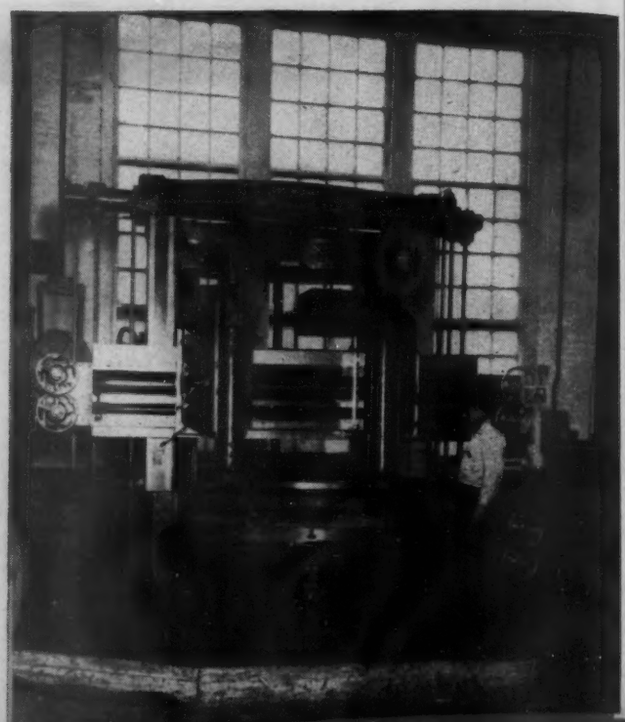
*TRADE MARK

More customer good will in every *Foamex* mattress! Customers will remember the deep-down comfort, the cradling softness of a *Foamex* night's rest! They'll like its coolness . . . its inviting smoothness. Those millions of tiny air-and-latex cells in a *Foamex* mattress breathe . . . contract with pressure, bounce right back into shape. And *Foamex* absorbs the shock of sudden halts, the sway of rounding horseshoe curves, the drone of spinning wheels! Yes, *Foamex* definitely gives the *rest of a lifetime!*

Lower maintenance costs in every *Foamex* mattress! *Foamex* air-and-latex cells are self-ventilating . . . making it dust, dirt, mildew, odor and damp proof . . . sanitary! It's lightweight . . . labor saving! What's more, now that *Foamex* is electronically processed it's almost wearproof . . . holding its shape, keeping its comfort years longer!

Write Firestone-Akron today for the *Foamex* booklet!





PASSENGER *Demands Back-*

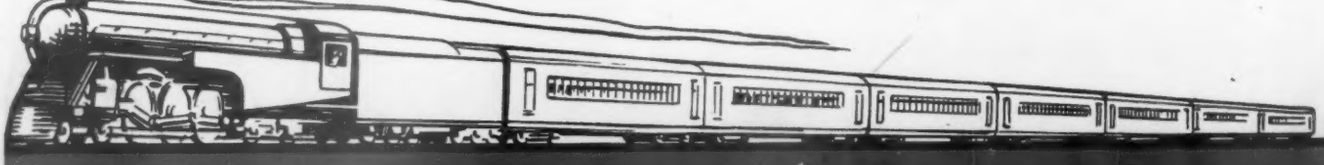
Bullards Will Streamline Your Repair Schedules . . .

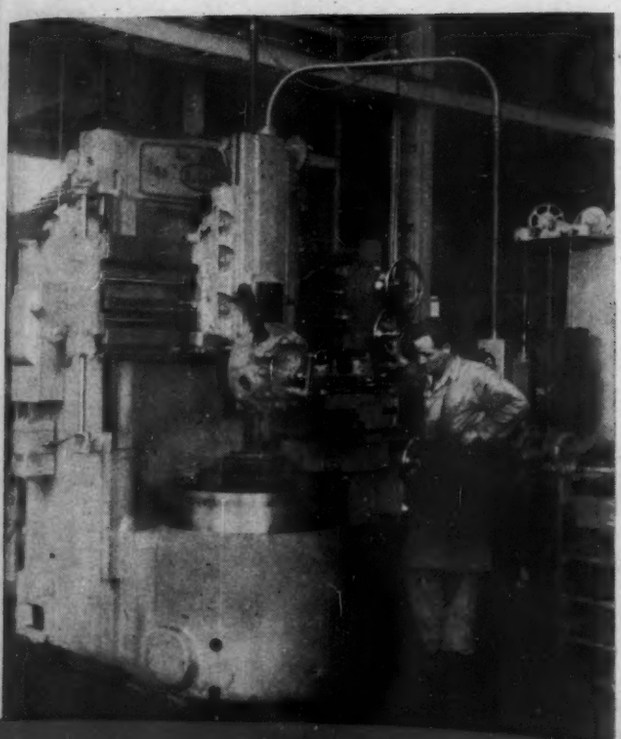
THE FUTURE of the railroad industry is dependent upon the progress made in all departments. All plans for improved operation must include modernization of repair facilities.

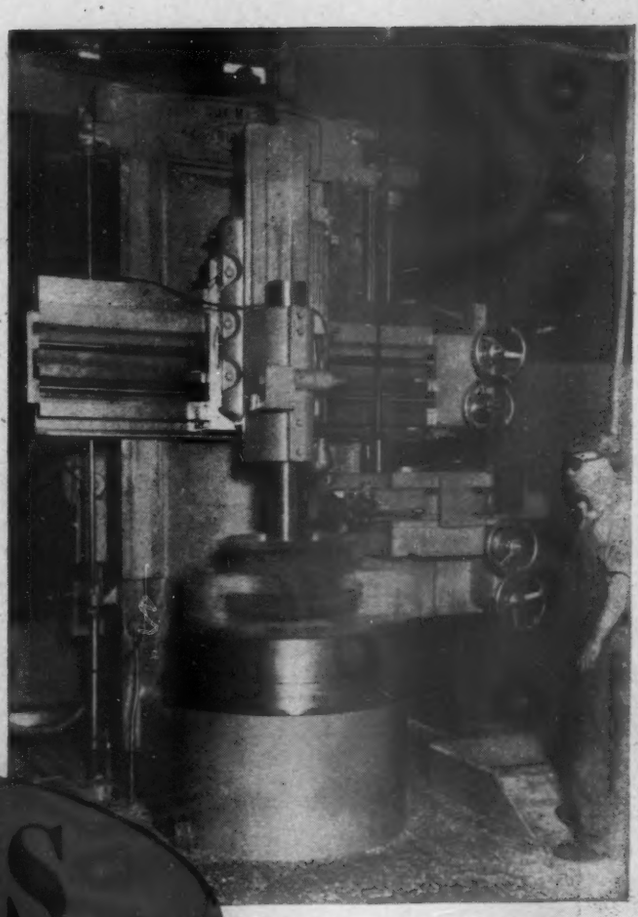
Streamline power makes no money lying in the back shop—there is only one answer—you must prepare to streamline your repair schedules.

BULLARD engineers have always cooperated with the railroad industry. As in the past they are prepared to meet your production problems of tomorrow. The new line of Cut Master Vertical Turret Lathes offers your railroad a remarkable opportunity of speeding your power through the shops and increasing availability.

The power, capacity, simplicity of operation and range of speeds and feeds built into BULLARD Cut Masters are far beyond the improvements made in ordinary boring and turning mills.







PROGRESS

Shop Progress

Bullard Cut Master V.T.L.

The BULLARD COMPANY

BRIDGEPORT 2 CONNECTICUT

Regardless of the type of power you are operating—steam, Diesel or electric, the supervisors of your back shops want BULLARD Cut Masters. Why? Because they know that they must speed power through the shops at the lowest possible cost for classified repairs.

Why not back up this experience? Your supervisors are working hard to insure the future of the railroad industry.

PROBLEM... *Forgings:*

SOLUTION . . .

IN the vital spots—where shocks and strains are most severe, where toughness and strength are essential—use forgings; made by Clark.

There's this to be said of Clark Gears and Forgings—their largest and most critical customer is Clark: for use in Clark's own products. There are no standards more exacting, more difficult to meet.

You soon reach the point, with gears and forgings by Clark, where you take it for granted that they'll stand up dependably.

FROST GEAR and FORGE

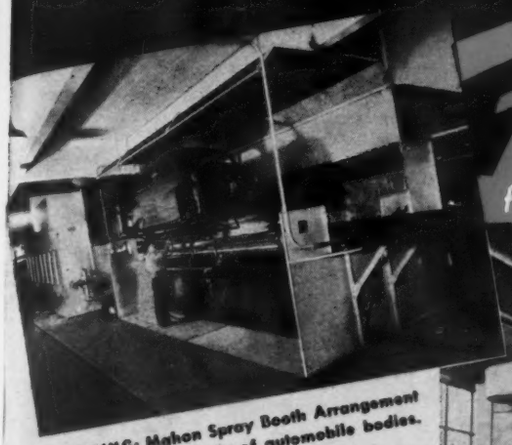
Division of CLARK EQUIPMENT COMPANY

JACKSON, MICHIGAN

OTHER PLANTS—BUCHANAN, BATTLE CREEK, BERRIEN SPRINGS, MICHIGAN

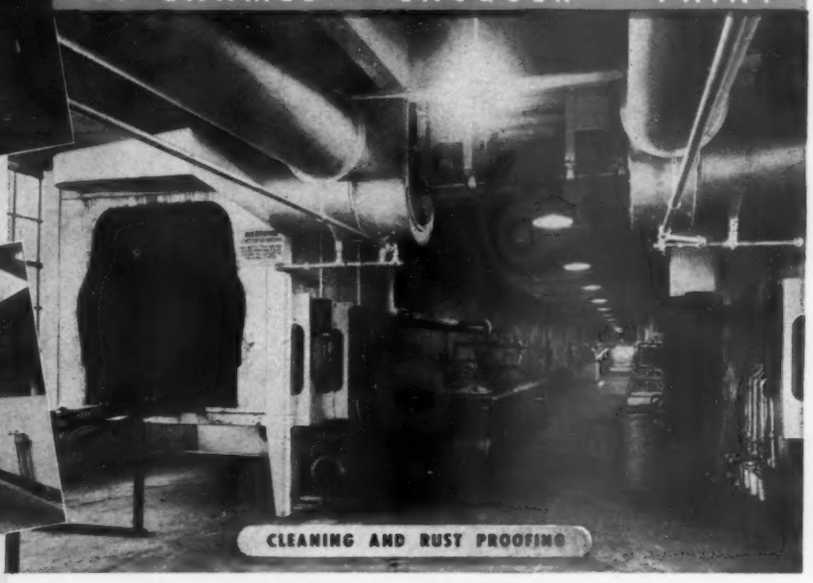
COMPLETE *Finishing* SYSTEMS

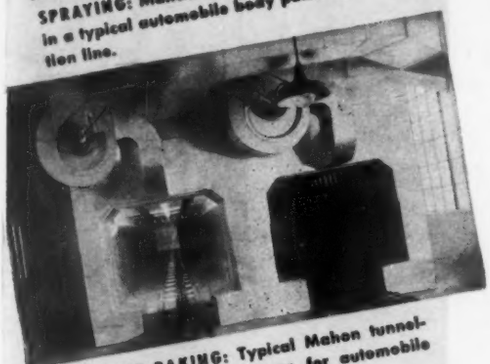
for ENAMEL • LACQUER • PAINT



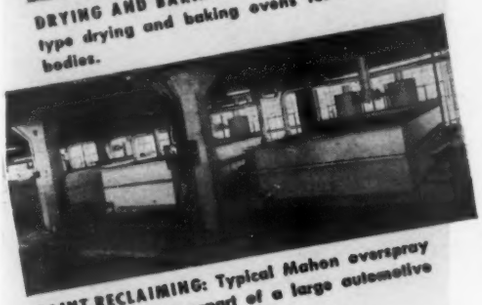
SPRAYING: Mahon Spray Booth Arrangement for painting underside of automobile bodies.

SPRAYING: Mahon Hydro-Filter Spray Booths in a typical automobile body painting production line.





DRYING AND BAKING: Typical Mahon tunnel-type drying and baking ovens for automobile bodies.



PAINT RECLAIMING: Typical Mahon overspray reclaiming system—part of a large automotive installation.

. . . Complete Equipment Planned Engineered, Built and Installed

When the Mahon organization contracts to supply a Complete Finishing System, it begins with a thorough study of the product to be finished, the production requirements, and the physical layout of the space available. In many instances it is more economical and desirable to build the entire finishing system, or the major part of it, outside of existing buildings—either adjacent thereto or on the roof. When these basic requirements have been established, Mahon engineers proceed to plan a Complete Finishing System that will do the particular job with utmost efficiency and economy . . . then, every unit of equipment that goes into the system is built in the Mahon plant and installed by Mahon workmen . . . the result is a thoroughly engineered and coordinated system that will produce the finest finish obtainable. If you are contemplating new equipment of this type, call in Mahon engineers . . . over twenty years of pioneering and research in this highly specialized field has endowed them with a wealth of technical knowledge and practical know-how not available to you elsewhere.

Address INDUSTRIAL EQUIPMENT DIVISION

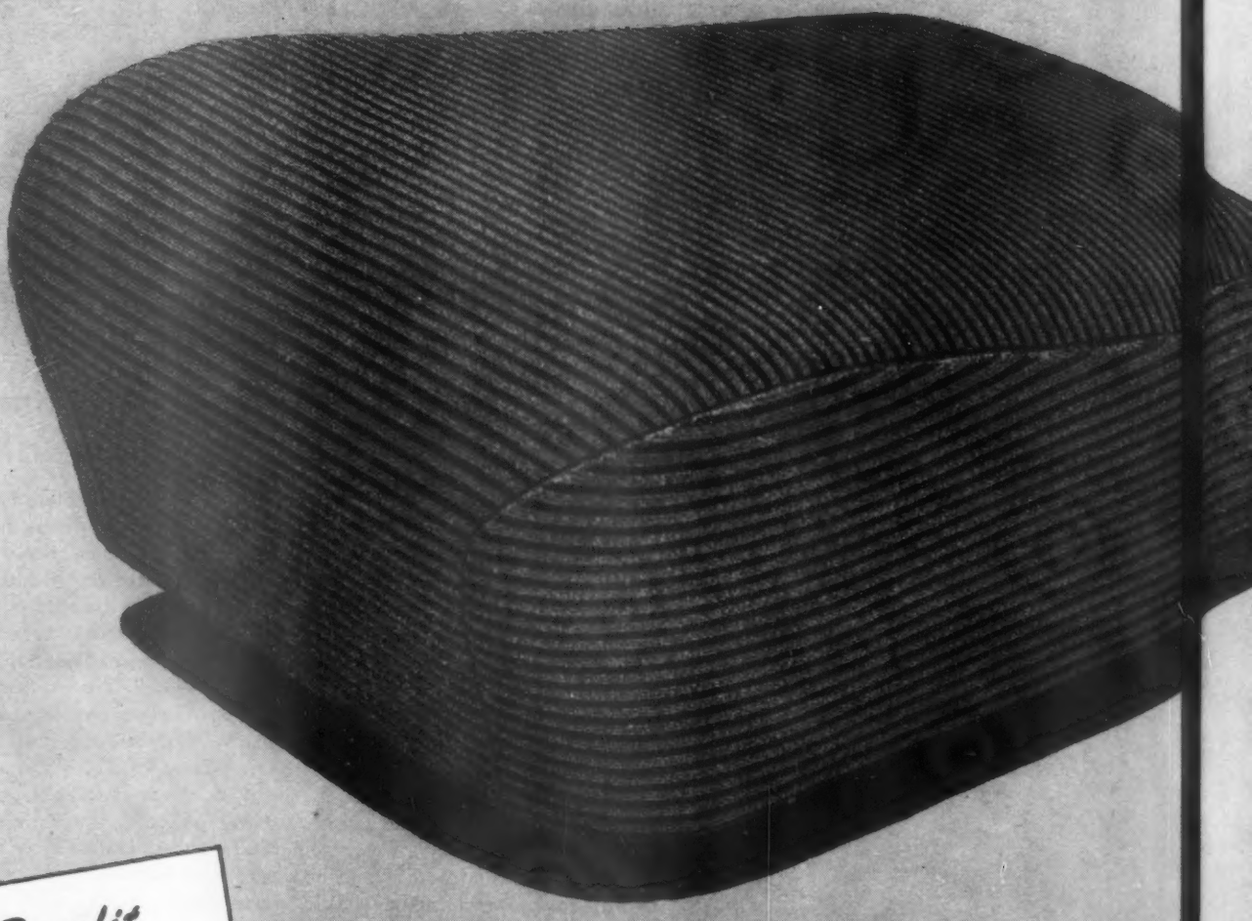
THE R. C. MAHON COMPANY

HOME OFFICE and PLANT, Detroit 11, Mich. • WESTERN SALES DIVISION, Chicago 4, Ill.

Engineers and Manufacturers of Complete Finishing Systems including: Metal Cleaning Machines, Rust-Proofing Machines, Dry-off Ovens, Hydro-Filter Spray Booths, Filtered Air Supply Units, and Drying and Baking Ovens. Also Paint Reclaiming Units, Hydro-Foam Dust Collectors, and many other Units of Production Equipment.

MAHON

How to Get *Your Customers* to Praise Your Service



Benefit
FEATURES

- New Comfort for Passengers
- Trouble-Free Maintenance
- A Long-Lived Profit Making Investment

You can have any type of top-pads you want on your Travel Comfort Cushions: Curled hair, rubberized hair, vegetable fibres, synthetic rubber, natural and synthetic rubber combinations and numerous other filler materials.

*Trade Mark

TRAVEL COMFORT CUSHIONS*

Ideal for Train or Plane, For Bus or Truck, For Transit Cars or Cabs

on LAND on SEA and in the AIR

TRAVEL COMFORT CUSHIONS

• Your business is built most quickly by passengers who praise your system, for comfort, for speed, for courtesy.

• Uncomfortable passengers become tired, nervous, irritable. Trip time drags, travel becomes monotonous and tiring. Complaints against employes and the system result from discomfort, boredom and unhappiness.

• For comfortable passengers, time slips rapidly by, trips seem short, continuously interesting. Energy is restored en route when riding on genuinely comfortable Travel Comfort Cushions. At the journey's end, passengers are happy, alert to new scenes and experiences.

• A comfortable passenger praises your service, recommends your system to friends, creates more business for you.

TRAVEL COMFORT CUSHIONS

are Fully Guaranteed

for comfort, beauty and quality. These cushions are helping leading carriers to build business. Specify Travel Comfort Cushions for your new or rehabilitated seating installations. May we explain completely, without obligation?

McINERNEY SPRING AND WIRE COMPANY

Factories: Grand Rapids, Michigan, and Passaic, New Jersey

SALES OFFICES: 661 Godfrey Ave., S. W., Telephone 6-1481, GRAND RAPIDS

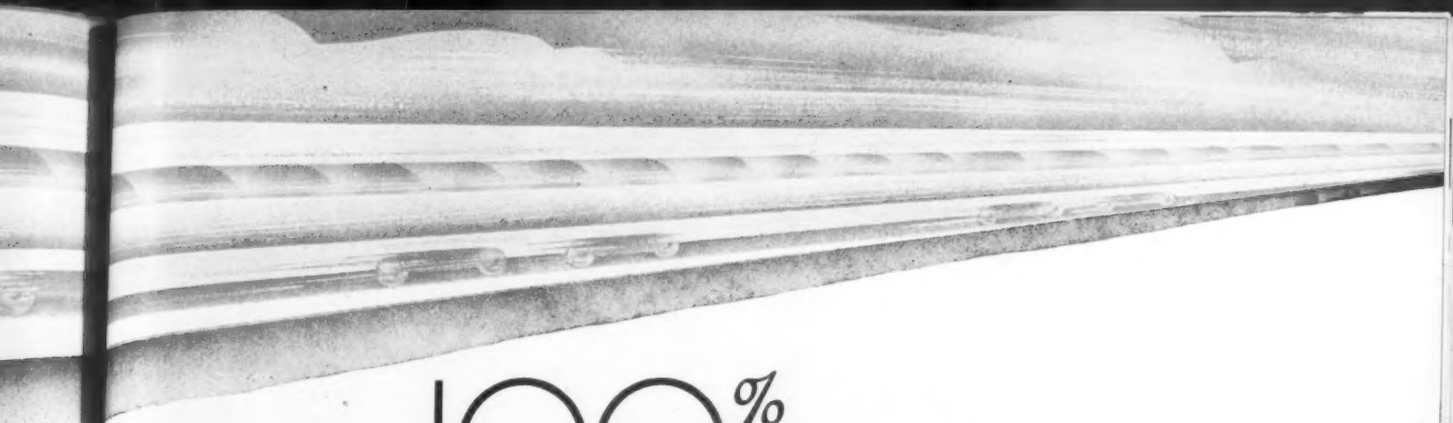
CHICAGO — 205 W. WACKER DRIVE — FRAnklin 5780

DETROIT — 911 FISHER BUILDING — MAdison 4425

New small dispenser for use in roomettes and compartments.

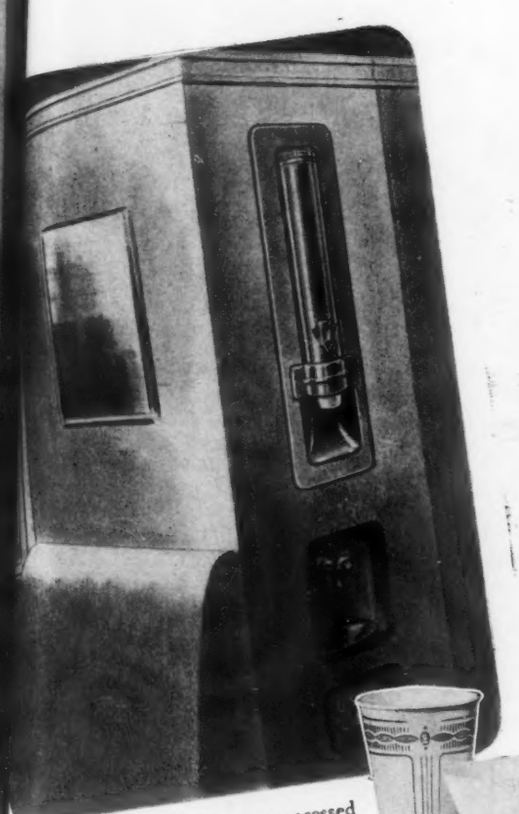
Two sizes in this handsome dispenser. Available for use with either regular Dixies or the cone-shaped cups.

New sunken recessed type metal dispenser in beautiful satin-chrome finish . . . an extremely attractive, modern piece of equipment.



MAKE THEM 100% MODERN IN EVERY DETAIL!

...with the finest drinking cup equipment available for Coaches...Club Cars...Sleeping Cars...Roomettes



Typical installation of the new recessed type cup dispenser... the only one of its kind on the market. Sleek, streamlined beauty combined with sturdy, die-cast metal construction assures years of service and passenger satisfaction.

Here are drinking cup dispensers with all the trim smartness so desirable for modern car interiors. Constructed of sturdy, die-cast metal, these streamlined dispensers will give years of service while meeting all demands for beauty and utility. Each is a pull-type with no moving parts, dispensing one cup at a time. All types are quickly adaptable for different size cups... Dixie or Vortex. The special removable insert allows quick change of cups without changing the entire dispenser.

The new recessed type cup dispenser is the last word in modern design. Finished in a beautiful, soft, lustrous satin-chrome, it harmonizes perfectly with the most modern car interiors... fits flush in the bulkhead. Its cylindrical cup container revolves for easy filling and closes flush with the walls of the dispenser. Clear plastic windows visibly indicate the need for refills.

Also available, but not illustrated, is the old type flat recessed dispenser.

In every detail these up-to-the-minute, efficient dispensers are perfect complements to the beauty and smartness of today's passenger cars. Give *your* passengers the best service... Dixie drinking cups and dispensers.

Write to Railroad Department, Dixie Cup Company, Easton, Pa.

DIXIE CUPS

AND

VORTEX CUPS

STANDARD IN RAILROAD SERVICE FOR OVER 30 YEARS

Should it be done with the oxyacetylene torch or by arc welding?

Airco technical men find: ***Arc welding, either A.C. or D.C., with present-day all-position electrodes does the job faster, providing sound, leakproof joints at lower cost.***

Their recommendations are based on years of close cooperation with American railroads, extensive study and experimentation in Airco laboratories and actual experience in railroad shops.

As an important factor in the development of both oxyacetylene and arc welding, Airco is in the unique position of being able to compare both processes and to decide without bias the merits of each for all types of railroad maintenance and fabrication operations.

Airco's railroad technical men will be glad to help you select the best method for your maintenance or fabrication jobs. Ask your nearest Airco office or write Air Reduction, General Offices: 60 E. 42nd Street, New York 17, N. Y. In Texas: Magnolia Airco Gas Products Co., Houston 1, Texas. Represented Internationally by Airco Export Corporation, New York 18, N. Y.

Costs come down under the Airco Plan

AIRCO **AIR REDUCTION**

OFFICES IN ALL PRINCIPAL CITIES

These Brakes Cut Running Time

No single factor has done more to make Streamliners both popular and profitable than their *ability to stop*—quickly; surely; smoothly.

That's why you'll find Simplex Unit Cylinder Clasp Brakes on practically *all* Streamlined passenger cars. 250% braking power, and high braking efficiency, make every stop in well *below* distance limits. Simple construction and standardized designs solve application problems. Dependability and low maintenance keep down operating costs.

On passenger cars or power units—on through runs or switching service—they permit the *safe,* fast movement that builds revenues.

Simplex brakes and A.S.F. *quality* springs throughout an entire train are the perfect combination for a smooth-running, *smooth-stopping* ride.

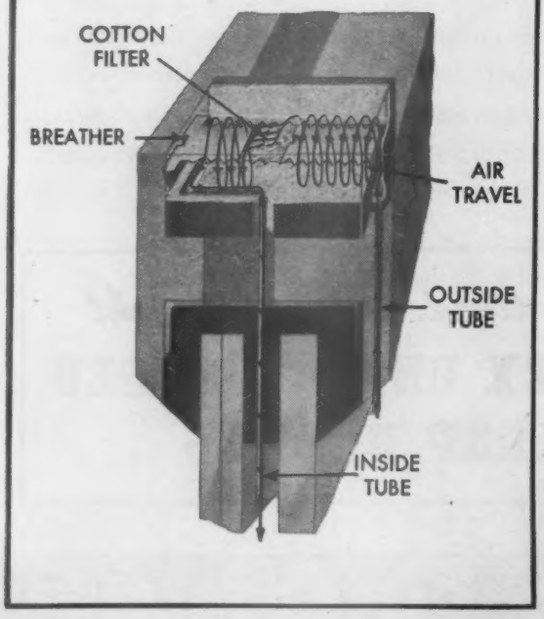
Streamlined, Light-Weight
SIMPLEX UNIT CYLINDER CLASP BRAKES

AMERICAN STEEL FOUNDRIES

MINT-MARK OF ◯ FINE CAST STEEL

Let Them SEE the Scenery You Advertise

...through Adlake BREATHER Windows!



TRAVELERS want to see the beauties of America as they travel on your line.

And now they *can*—at no greater expense to you—thanks to Adlake Double-Glazed Sash Units which assure clear, unhampered vision at all times!

No Maintenance Problems

The Adlake Breather—an exclusive principle—permits the air between the panes to adjust itself quickly to temperature or altitude changes—no artificial drying method is used!

Which means no dehydrating compound to replace, and, except for routine washing or broken pane replacement, *absolutely no maintenance!*

For New Cars or Reconditioning

Adlake Double-Glazed Windows come in aluminum or Alumilited finish—designed for new cars or for reconditioning present equipment—and they're built to meet the most rigorous requirements of railroading.

Write for details . . . there is no obligation whatsoever.

THE ADAMS & WESTLAKE COMPANY

Established in 1857 **ELKHART, INDIANA** *New York • Chicago*

Manufacturers of Adlake Specialties and Equipment for Railway, Airway, Highway and Waterwa

The Best Laid Plans...

will include

ANEMOSTAT

DRAFTLESS AIR-DIFFUSION for *successful* air-conditioning

On the boards today, the ultra-modern trains of tomorrow are being designed to roll faster, smoother, quieter, and safer. Incorporating all the newest ideas for utmost passenger comfort, they will add much to the joy of traveling.

The best laid plans for newly-designed railroad cars include *successful* air-conditioning. To get it, more and more railroad car designers are specifying Anemostat — the patented air-diffuser — which completes the air-conditioning process by providing scientifically correct distribution of the conditioned air to every part of any car.

Each type of sleeper, diner and coach requires its own special air-diffusion pattern. Add to this the extreme changes proposed in their structural design, interior decoration, equipment — and the need for Anemostat's correctly engineered air-distribution becomes clearly evident. Without it, the air-conditioning system is incomplete — drafts occur, stale air-pockets persist, temperature and humidity are unequalized.

The Anemostat Air-Diffuser eliminates these trouble-breeders by distributing conditioned air in pre-determined patterns, and precisely in accordance with prescribed air velocities. The result: *SUCCESSFUL* air-conditioning for *true* air-comfort!

Anemostat engineers are air-diffusion specialists. Backed by 25 years of experience, they can capably solve difficult problems in air-diffusion. A consultation with an Anemostat engineer can be arranged today. There is no obligation.

Descriptive literature is available on request.

AC-1088

"No air-conditioning system is better than its air-distribution"

ANEMOSTAT

REG. U. S. PAT. OFF.

ANEMOSTAT CORPORATION OF AMERICA
10 East 39th Street, New York 16, N. Y.
REPRESENTATIVES IN PRINCIPAL CITIES

CATERPILLAR TRACTOR CO. says:

"The Best Treatment for Accidents is Their Prevention"

CATERPILLAR TRACTOR CO. uses...

A-O Safety Goggles

Caterpillar Tractor Co. supplies A-O Safety Goggles to employees on eye-hazardous jobs. As illustrated, they service and repair goggles right at the worker's machine, through goggle service carts manned by specially trained experts. As a result of their eye protection program, the cost of eye injuries in this Peoria plant has been materially reduced.

Your nearest A-O Safety Representative will be glad to arrange for an eye hazard survey of your plant, at no charge, and to help you set up a complete eye protection program.

American Optical COMPANY *Safety Division*

SOUTHBRIDGE, MASSACHUSETTS
BRANCHES IN PRINCIPAL CITIES

Amazing New Postwar Transporter Lifts Loads Faster...Moves Loads Easier!

Adds New Efficiency, Longer Life to Miracle Electric Truck

Yes, you get more—much more in the amazing NEW, POSTWAR TRANSPORTER—the miracle electric truck long famed for cutting handling costs in half and taking the work out of every material moving job.

Astounding new money, time and work saving features have been added. Developments that lift loads faster, move them easier, give longer life and greater efficiency to a unit already noted for energy-saving performance.

With practically everything new but the hardware, the features below only highlight what you will get in the 1946 Transporter. Send the coupon. Get *all* the facts, before you decide on any motorized hand truck.

1 **EASY TO GET AT POWER UNIT**

Changes in design have been made, so that all parts of the power unit are easily accessible. The wiring system has been simplified, and component parts compactly placed where they can be reached easily for lubrication, and inspection.

2 **NEW SAFETY BRAKE**

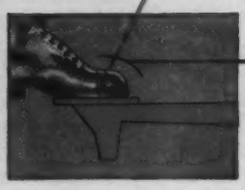
Complete "dead-man" control is assured by a double shoe external contracting type larger diameter brake, which provides four to five times more braking effort. This gives you a Positive Mechanical Brake more efficient and safer the instant control handle is released to upright position.

4 Double-Pitch Reduction Chain Drive Prolongs life of unit.

5 New Magnetic Contactor Utilizes Silver Alloy Tips to give ten times more life.

6 Carbon Brushes in Commutator Type Collector Ring Replace Copper Fingers to eliminate lubrication, increase wearing quality.

Approved by Underwriters' Laboratories, Inc.



1 STROKE CONTACTS SKID

2 MORE STROKES LIFT LOAD

YOU MOVE WITH AMAZING "TOUCH-OF-YOUR-THUMB" EASE, *says*... "*MUSCLE MIKE*"

The new 3-second Lift Pedal contains two pistons or cylinders, the high pressure (low speed) cylinder being housed inside the low pressure (high speed) piston. Both cylinders are actuated by the cam when the foot pedal is depressed. One stroke of the foot pedal is all that is required to engage skid.

When load resistance is encountered, the fluid from the larger or low pressure cylinder by-passes back into the reservoir, and the high pressure cylinder is employed to raise the load. So the first stroke of the foot pedal engages the load, and two more strokes raise the load sufficiently to move.

FOOT PEDAL HINGES BACK FOR SHORTER TURNING RADIUS

To provide a shorter turning radius, the foot pedal is hinged back when not in use for lifting.

Transporter
A PRODUCT OF AUTOMATIC
Lightens LIFE'S LOADS

AUTOMATIC TRANSPORTATION COMPANY
Div. of The Yale & Towne Mfg. Co.
51 West 87th St., Dept. W, Chicago 20, Illinois

Please mail me without cost or obligation, complete facts about the NEW Postwar TRANSPORTER.
( ) Have an A. T. C. Specialist call and survey my material handling costs.

Company Name.....
By.....Position.....
Street Address.....
City.....State.....

LOOK TO THE LEADER FOR ALL THAT'S NEW

YOLOY

IS THE WORD FOR PROGRESS in modern Passenger Car Construction

YOLOY is Youngstown's high-strength nickel-copper low alloy steel. It is available in plates, sheets, strip, bars, shapes, cold drawn bars, seamless and electric weld pipe.

Used for more than ten years in both passenger and freight car construction, Yoloy continues to demonstrate its value for railroad purposes as a weight-saving, long-lived material of construction. Six outstanding characteristics suggest the use of Yoloy for car construction.

1. TENSILE STRENGTH--This property of Yoloy has led to its use for literally scores of applications, to reduce dead weight for increased payload without sacrifice of strength. Car builders report as much as 20% to 25% or more weight saving with Yoloy, as compared to carbon steel.

2. CORROSION RESISTANCE--Repeated tests on a variety of carbon and alloy steels show that the Yoloy type steel stands up unusually well when exposed to the action of marine and industrial atmospheres and other corrosive conditions common to railroad service. In actual service, Yoloy bears out this test-demonstrated ability to resist corrosion.

3. SHOCK RESISTANCE--Standard impact tests as well as performance in service prove that Yoloy retains a marked ability to resist shock, even at the lowest temperatures met in normal service.

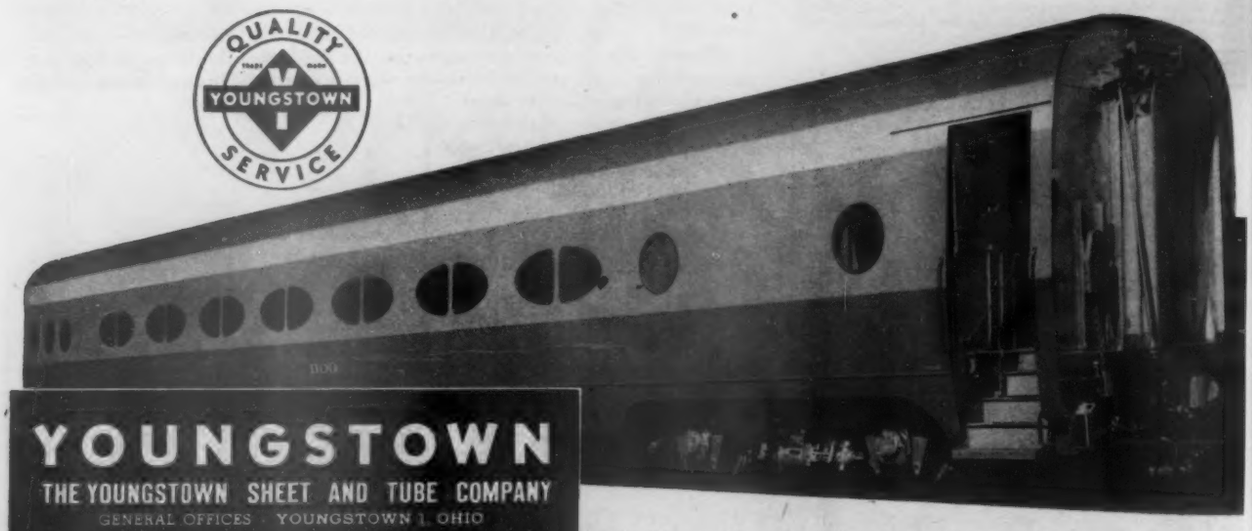
4. ABRASION RESISTANCE--Yoloy's toughness enables it to withstand wear and rough treatment through a long lifetime of dependable service.

5. FORMING QUALITIES--Because of its uniformity and its well balanced ductility, high-tensile strength Yoloy works excellently, without weakening or breaking, on angle bends and in involved forming operations.

6. WELDABILITY--Yoloy's unique physical properties, derived from a balanced combination of chemical elements, reduce air hardening to a minimum. Yoloy welds as readily as most carbon steels of the same carbon and manganese content.

Yoloy deserves your careful consideration for modern, streamlined passenger car construction, as well as for any work where weight-saving without loss of structural strength is a prime factor. If you are not familiar with Yoloy steel, let our representative give you the facts.

QUALITY YOUNGSTOWN SERVICE



A modern coach, built for one of the western roads. Yoloy construction reduced the dead weight load more than 20%.

YOUNGSTOWN

THE YOUNGSTOWN SHEET AND TUBE COMPANY

GENERAL OFFICES - YOUNGSTOWN 1, OHIO

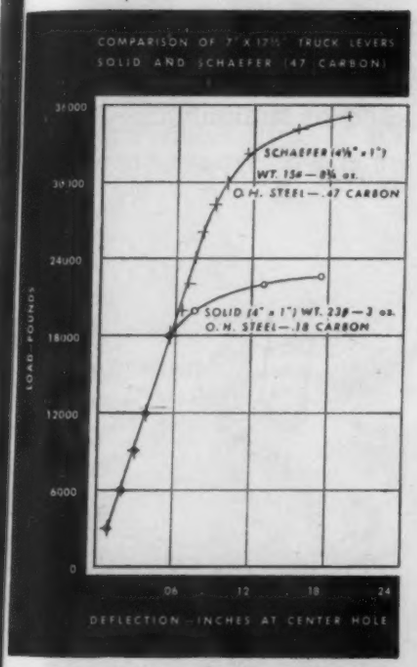
Export Offices - 500 Fifth Avenue, New York City

Manufacturers of

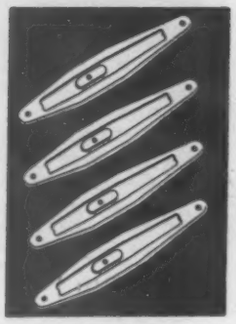
CARBON - ALLOY AND YOLOY STEELS

Sheets - Plates - Pipe and Tubular Products - Bars - Rods - Wire - Cold Drawn Carbon Steel Rounds - Tie Plates and Spikes - Conduit - Electrolytic Tin Plate - Coke Tin Plate

Needless weight above car wheels is extravagance that no railroad can afford . . .



So, Schaefer takes the metal that would make three levers of the solid type and forges from it four scientifically designed Schaefer levers. Each is lighter in weight by one third, yet stronger than the solid lever. The chart shows the smaller deflection of the Schaefer lever under load. Because the design is correct, resistance to stress is uniform throughout the entire length. Every manufacturing operation is accurately controlled, holes are correctly spaced and reamed to exact size. Specify Schaefer.

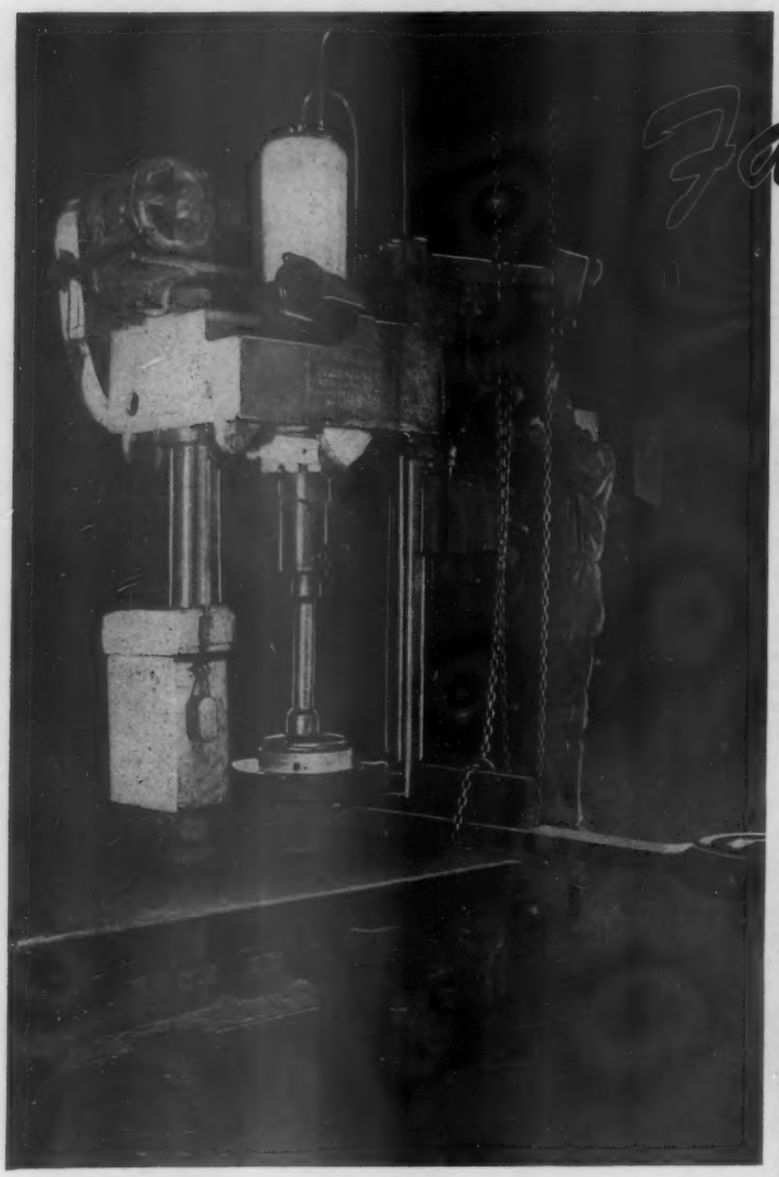


less Weight

Full Strength

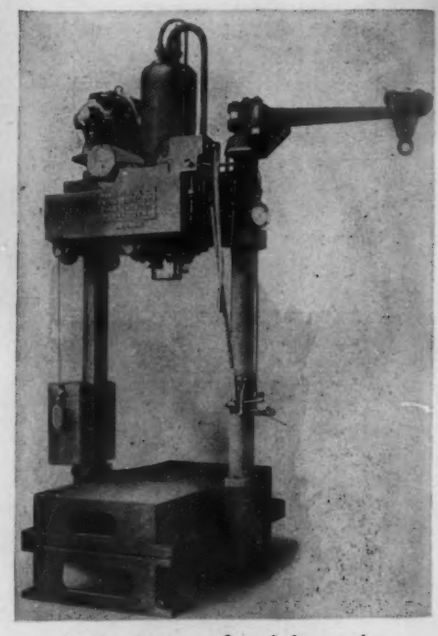
Schaefer

SCHAEFER EQUIPMENT COMPANY • • • KOPPERS BLDG. PITTSBURGH, PA.



Fast Work on BUSHINGS, BRASSES, etc.

Chambersburg Vertical Hydro-Pneumatic Bushing Presses are the most rapid machines available for inserting or removing connecting rod bushings, driving rod brasses, etc., and for bending or straightening rods, levers and all types of connections.



In addition to the speed of operation due to the pneumatic rapid traverse, the press is so designed that simplicity and ease of control make it a favorite with shop men. The ram, for example, can be advanced, stopped or returned without distracting the operator's attention from his work. Pressures can be applied and held indefinitely. Maintenance is easy and inexpensive.

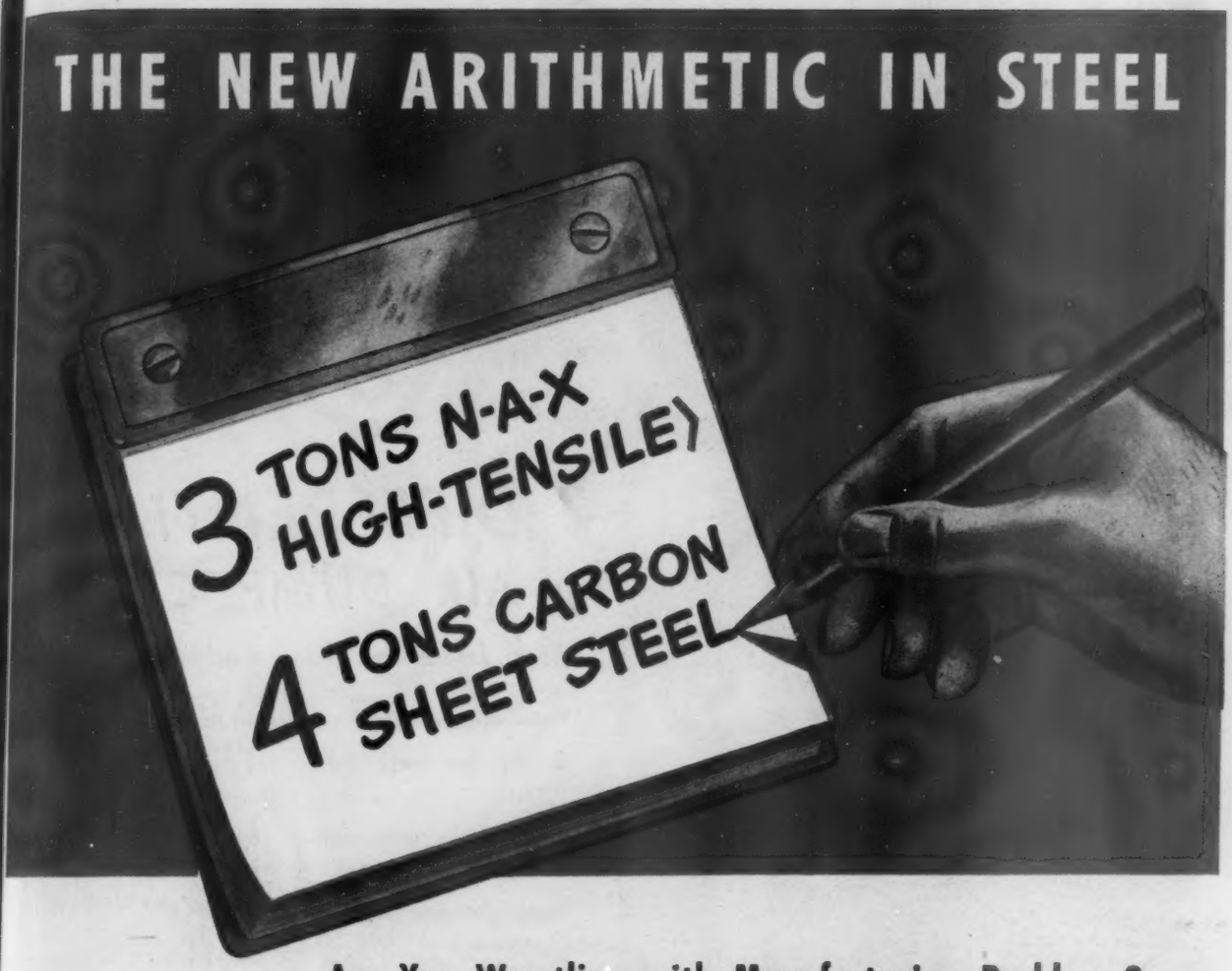
Write for complete information on this and other Chambersburg Railroad Shop Tools . . .

CHAMBERSBURG ENGINEERING CO., CHAMBERSBURG, PA.

CHAMBERSBURG

HAMMERS · CECOSTAMPS · PRESSES

THE NEW ARITHMETIC IN STEEL



Are You Wrestling with Manufacturing Problems? You Can Get *More* Products per Ton—*Better* Products per Ton—with N-A-X HIGH-TENSILE Steel

Manufacturing experience proves it true: N-A-X HIGH-TENSILE steel enables the average user of hot- and cold-rolled sheets to increase production of units 33% *without* increasing steel consumption.

With this low-alloy, high-tensile steel, less metal is required for each unit. Sections are thinner, yet have *equal* strength and *greater* durability. This saving may well make it possible for you to produce four parts where you normally produce three.

N-A-X HIGH-TENSILE steel can be drawn and formed to intricate shapes. It has excellent weldability, high fatigue- and corrosion-resistance and great impact toughness. These superior qualities bring you not only a better product—but also important economies in handling, fabricating and finishing.

The full extent to which N-A-X HIGH-TENSILE can increase and improve your production depends, of course, on your own particular products and methods. Our metallurgists and engineers will be glad to help you investigate fully.

MAKE A TON OF SHEET STEEL GO FARTHER
Specify—
N-A-X
HIGH-TENSILE STEEL

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GREAT LAKES STEEL CORP.

GREAT LAKES STEEL
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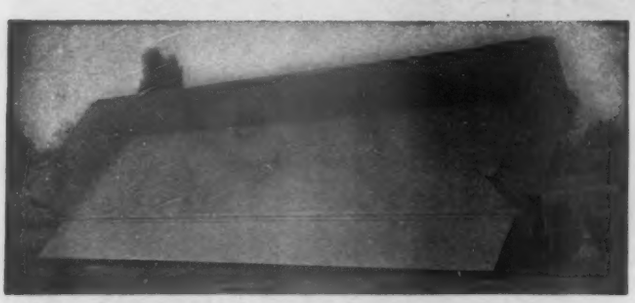
N-A-X ALLOY DIVISION • DETROIT 18, MICHIGAN
UNIT OF NATIONAL STEEL CORPORATION



DIFFERENTIAL AIR DUMP CARS

Show Important Time and Cost Savings

- Automatic side dumping
- Dumps far away from track
- Builds dump with minimum labor
- Steep dumping angle — smooth floor
- Dumps to either side quickly by air
- Built for long life and low maintenance
- Built to stand severe loading conditions
- Quick and sure dumping by powerful air cylinders
- Clean dumping of any size or class of material
- Down-folding side doors—clear discharge opening
- Simple, rugged construction—no locking mechanism

Ideal for the following operations

- ***Ditching***
- ***Construction***
- ***Rip rap***
- ***Revenue Service***
- ***Filling in trestles***
- ***Terminal waste disposal***
- ***Stockpiling coal***
- ***Reclaiming low waste land***

The simple design and rugged construction which has made the Differential Air Dump Car a prime favorite for heavy duty mining operations will pay off in railroad operation in long life, low maintenance and high availability for service.

DIFFERENTIAL STEEL CAR COMPANY

FINDLAY, OHIO

Builders of Haulage Equipment Since 1915

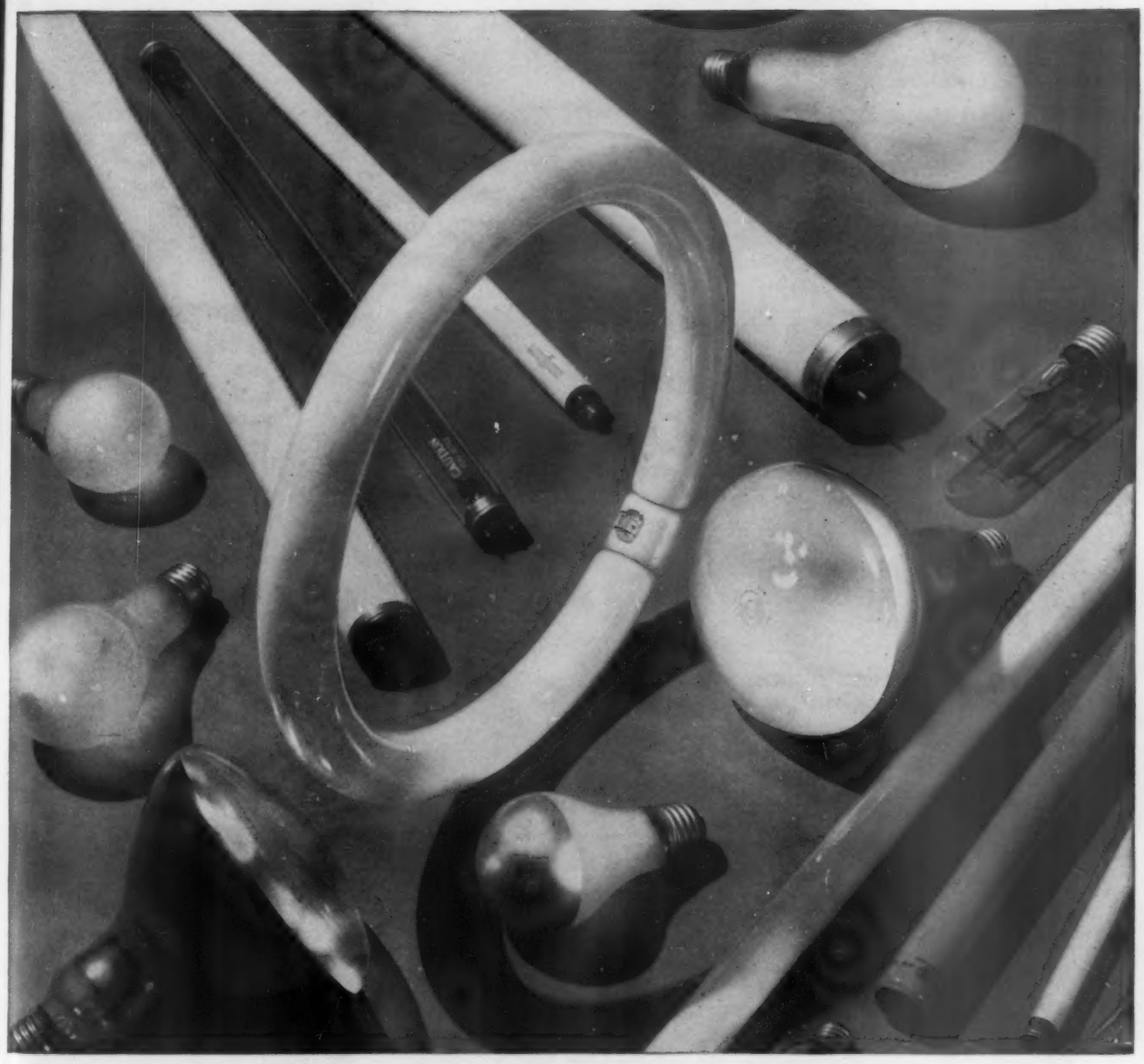
Select the lighting *you* need!

WHETHER you build or remodel, you'll find that G-E lamps will give you the kind of light you really need . . . lighting that's up to date, to fit your individual plans or those of your architect.

For fluorescent light there are the General line, Slimline and Circline lamps . . . Among the newer incandescent lamps are G-E Reflector, Projector and Silvered Bowl. Add to these the many other G-E lamps in varied sizes and shapes!

And remember the constant aim of G-E Lamp research, which is to make G-E Lamps

Stay Brighter Longer!



G-E LAMPS

GENERAL ELECTRIC

MORE POWER...

Weighing but 304,500 pounds fully loaded, this mighty passenger locomotive is the lightest of all comparable-rated diesel-electric cab units. At the same time, it is one of the most powerful—its 16-cylinder, turbosupercharged engine delivers a full 2000 hp for traction . . . and still has plenty of power to spare.

This combination—light weight, plus unusually high reserve power—means you haul far less dead load, more payload. You can roll up more passenger-miles for every locomotive-mile.

To determine exactly how this great new diesel-electric can increase the earning power of your passenger operations, our engineers will be glad to work with you in a detailed motive-power survey. Simply get in touch with your Alco or G-E representative.

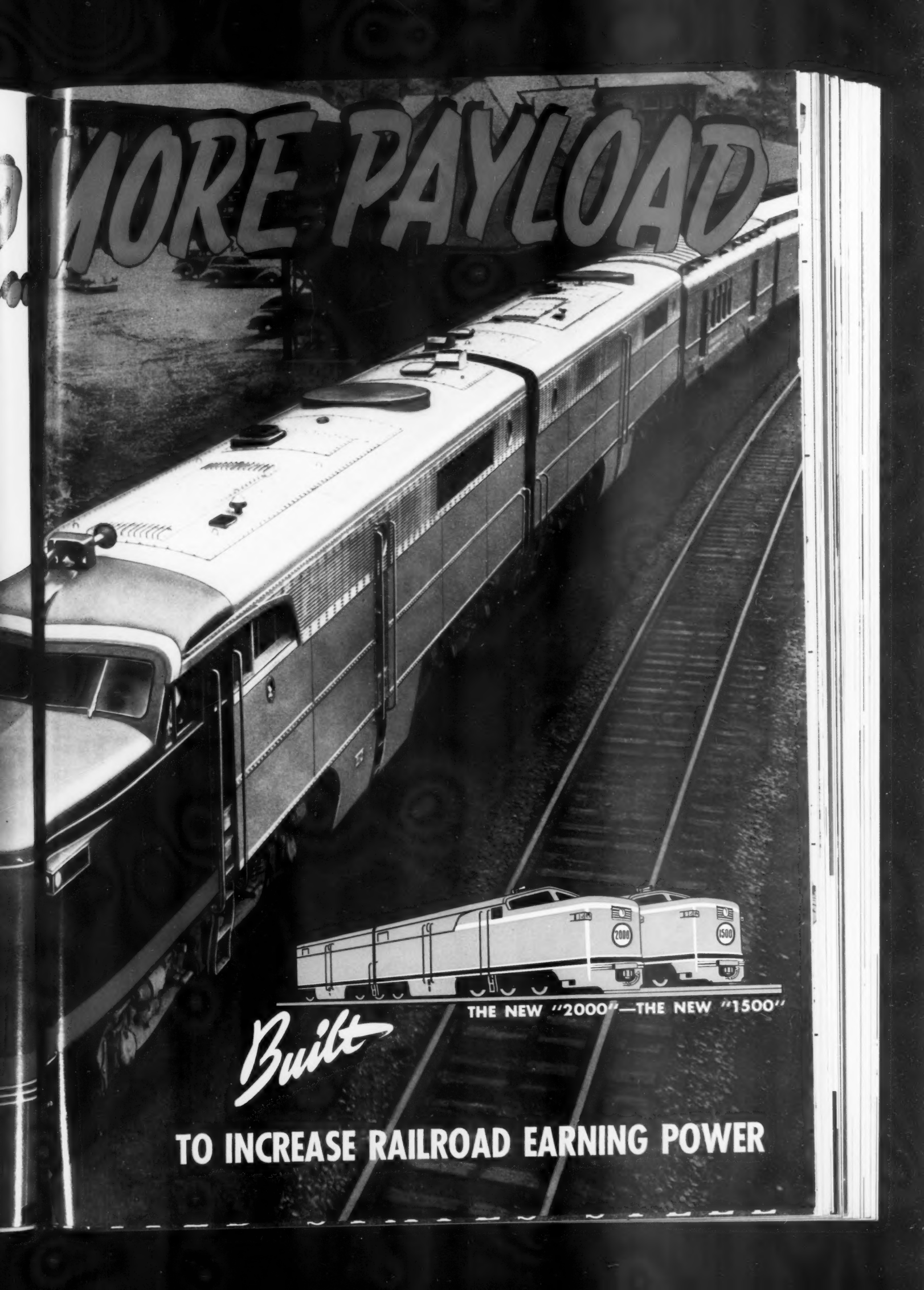
Alco GE

AMERICAN LOCOMOTIVE

and

GENERAL ELECTRIC

113-176-9680


MORE PAYLOAD
2000
1500
THE NEW "2000"—THE NEW "1500"
Built
TO INCREASE RAILROAD EARNING POWER

Like Most Large Private Contractors USE

ROYCE KERSHAW
COMPANY, INC.
RAILROAD CONTRACTORS

JACKSON VIBRATORY TIE TAMPERS

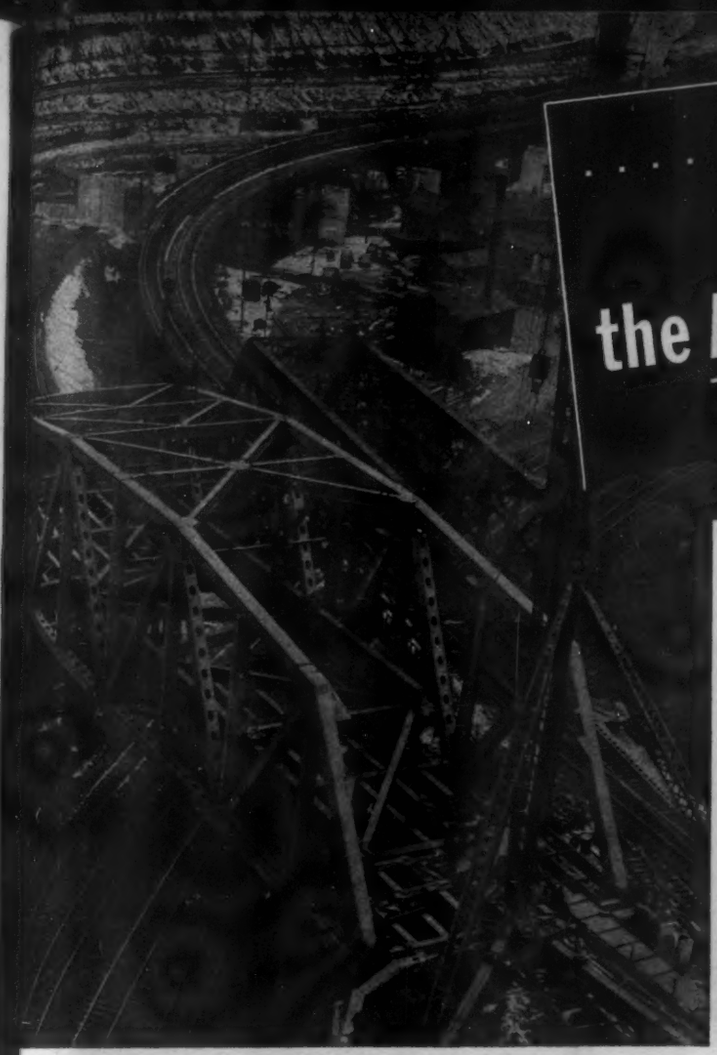
The June issue of "Construction Methods" contains a very interesting illustrated account of the complete reconstruction and reconditioning of the Atlantic Coast Line Railroad Company's track between Savannah, Ga., and Jacksonville, Fla., by Royce Kershaw Company, Inc., private contractors. Many ingeniously devised special machines are employed to expedite the job in the face of shortage of labor. *"All tamping," says C. M., "is done with Jackson electric tampers."* And that, in our estimation, constitutes another bit of indisputable evidence that with men who are track experts, whose work must stand the most exacting inspection, JACKSON Vibratory Tampers offer the fastest, most economical means of doing the best possible job of ballast placement.

Let us show you how JACKSON Tampers and Power Units can be used to far outstrip any other tie-tamping equipment in quantity and quality of track maintained.

Construction personnel on railroad track project includes (left to right): W. J. Aldridge, chief inspector, Atlantic Coast Railroad; Royce Kershaw, general manager, and O. Smith, general superintendent, Royce Kershaw Co., Inc.

Two WS-4 Jackson Power Plants mounted on push car are used to power eight Jackson Tampers.

ELECTRIC TAMPER & EQUIPMENT COMPANY
LUDINGTON MICHIGAN



. . . . ANOTHER BRIDGE PROBLEM

solved the American Bridge Way!

S THE Union Railroad's new 204-ft. three-track, through truss span, crossing the line of the Pennsylvania Railroad near East Pittsburgh, Pa. It replaces the old two- structure to the right. The problem was to construct this efficiently and economic- *-nd without disrupting the continuously heavy traffic of either railroad.*

THE FIVE PRR TRACKS were temporarily spanned by 122-ft. plate girders supported on four falsework bents. The truss span floor beams were suspended from the girders during erection, thus eliminating intermediate falsework and maintaining the necessary overhead clearance. The girders will again be used as falsework for dismantling the old truss span and will then go into a permanent plate girder viaduct farther up the line—the temporary girder bracing will become permanent truss stringers.

THE TRUSSES of the new bridge are 48-ft. center to center—total weight of the span is 1,086 tons. Note the giant American Bridge stiff-leg derrick. Its 150-ton capacity is invaluable on a job of this type, making it possible to erect most of the span from one position, "on shore".

All the steel work for this relocation project was designed, fabricated and erected by American Bridge Company. Whatever your own bridge problems, you are invited to call upon the unsurpassed facilities and engineering experience of American Bridge

MERICAN BRIDGE COMPANY

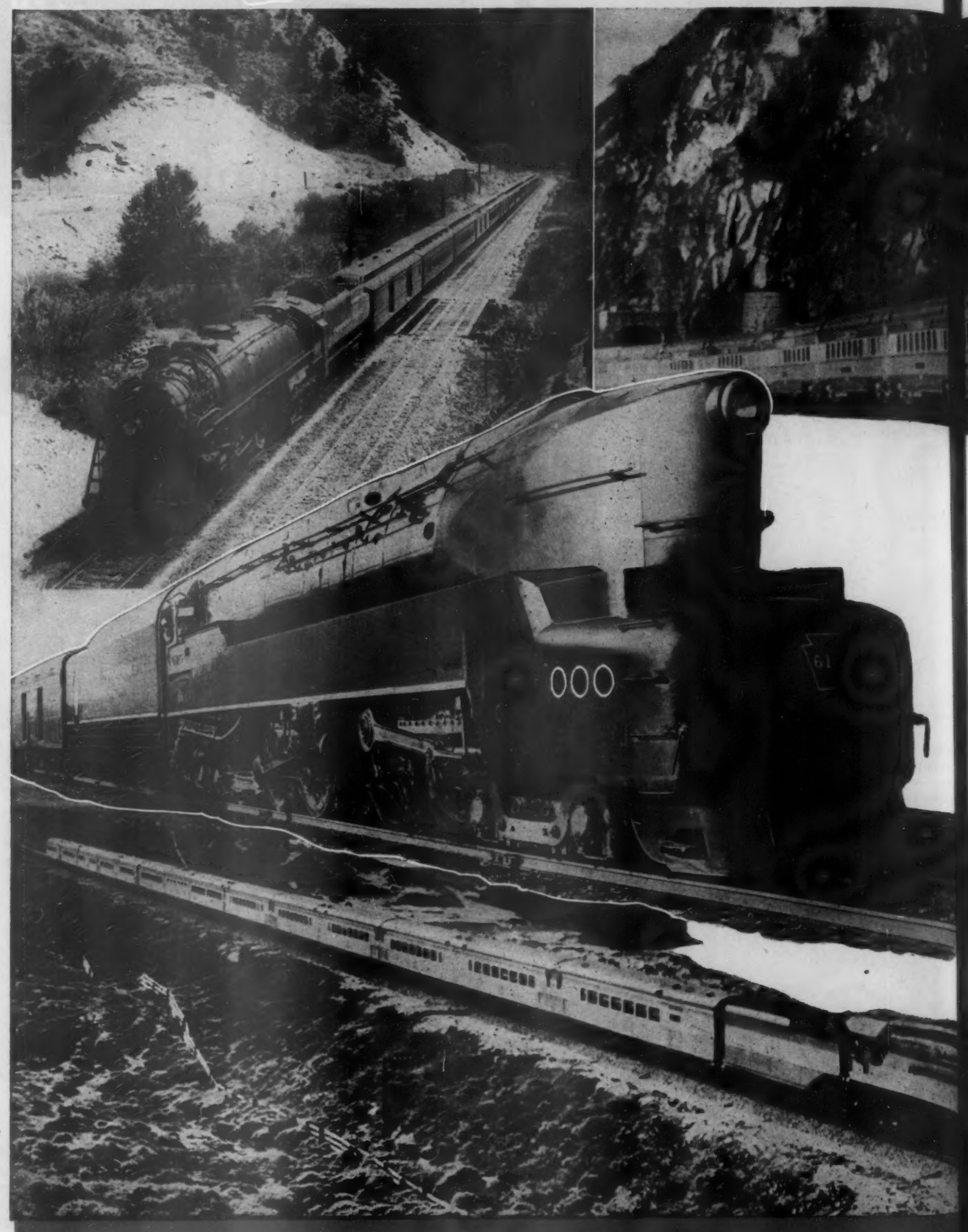
General Offices: Frick Building, Pittsburgh, Pa.

trict Offices in: Baltimore · Boston · Chicago · Cincinnati · Cleveland
nver · Detroit · Duluth · Minneapolis · New York · Philadelphia · St. Louis

Columbia Steel Company, San Francisco, *Pacific Coast Distributors*
United States Steel Export Company, New York

AMERICAN BRIDGE COMPANY · USS STEEL · UNITED STATES STEEL

UNITED STATES STEEL

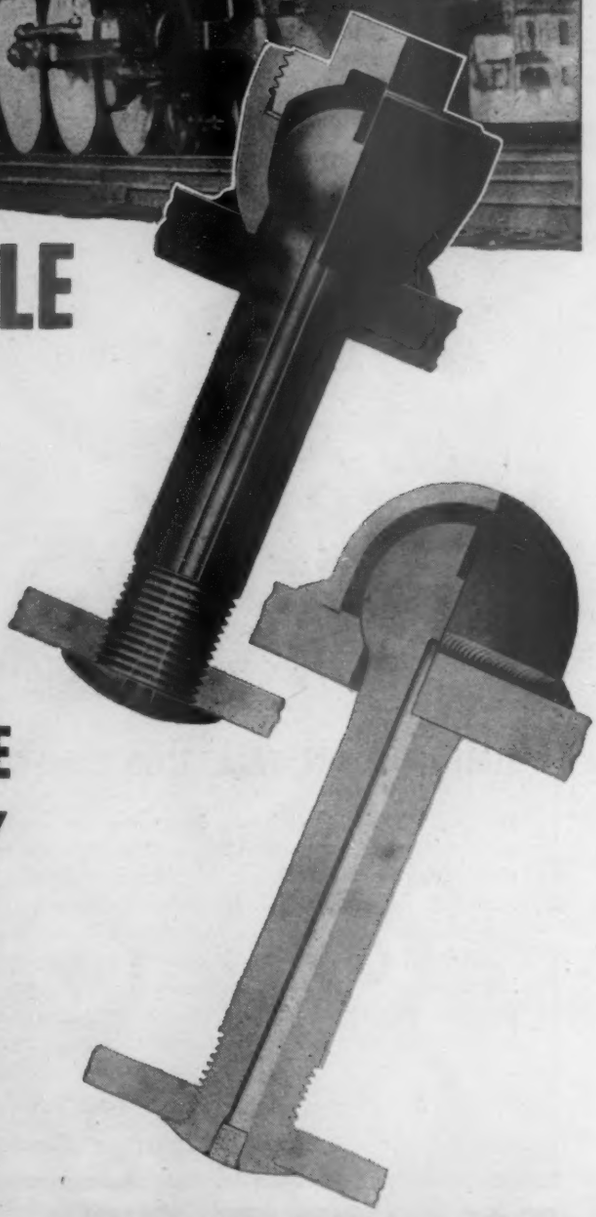


FLANNERY BOLT C

HOLLOW FLEXIBLE STAYBOLTS

Provide

GREATER SAFETY
FASTER INSPECTION
LOWER MAINTENANCE
HIGHER AVAILABILITY



LOCOMOTIVES COMPLETELY EQUIPPED WITH
HOLLOW FLEXIBLE
STAYBOLTS
HAVE MADE OVER
Million Miles
WITHOUT REPAIRS TO THE FIREBOX

COMPANY BRIDGEVILLE PENNSYLVANIA

for Standard or Special EQUIPMENT

MORTON

"OPEN-GRIP" METAL RUNWAYS

SIMPLIFIED INSTALLATION...LOW-COST MAINTENANCE...SAFEST FOOTING

Morton "Open-Grip" Metal Runways are made of strongest possible construction, as proved by the most rigid service tests. Self-clearing openings prevent collection of ice, snow, mud. Exclusive Kass safety studs provide positive traction—*surest footing*—year 'round.

No special tools, welding or drilling required to install. Nothing to work loose, warp or splinter. Ingenious design avoids precision work and loss of time in fitting. Simple cup-and-bolt device clamps runway into permanent position. Runways are structurally perfected to resist highest torsional strains imposed in service. They're guaranteed to last the lifetime of the car body.

Specify Morton "Open-Grip" Runways and Brake Steps for all types of equipment—for modern all-steel, aluminum or reconditioned equipment. They're thrifty to install. They're thrifty in service. Please write for full information.

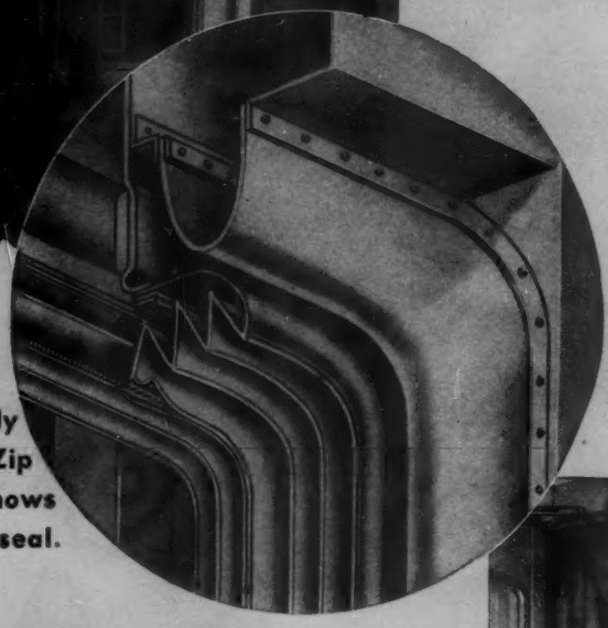
"Open-Grip" Runways for Freight Cars • Tank Cars • Stock Cars
Covered Hopper Cars • Special Equipment

MORTON MANUFACTURING COMPANY

5105 WEST LAKE STREET • CHICAGO 44, ILLINOIS

MORTON-ZIP WEATHER-SEALS

for STREAMLINED VESTIBULES



Morton-Zip Detail — Above — car under construction ready for installation of Morton-Zip Weather-Seals. Circular cut shows arrangement of weather-seal.

EASILY ADJUSTED

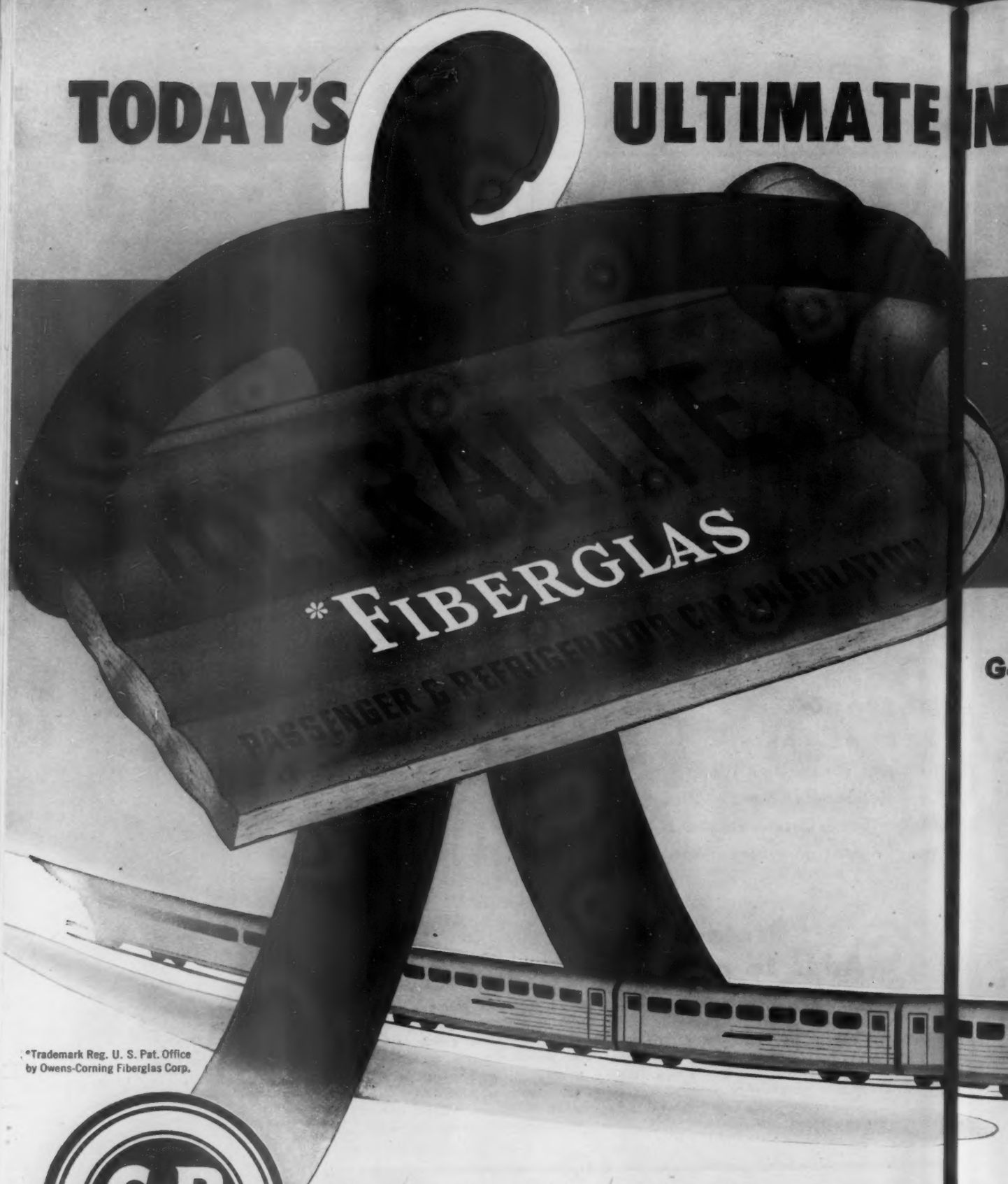
View below shows trainman fastening the Morton-Zip closure between two cars on the famous Union Pacific Streamliner City of San Francisco.

Protects interiors— Adds to passenger comfort

Protect the interiors of spotless new cars by sealing out the dust, soot, rain and snow that filters through their diaphragm face-plates. Morton-Zip weather-seals are proof against dirt intrusion and air-draughts; they improve the results of air conditioning, and they tend to insulate against running noises. Your passengers will appreciate the added comfort of these snug vestibule closures. In modernizing old cars, install Morton-Zip to give them new car weather protection. Cars equipped with Morton-Zip may be coupled to cars which lack this equipment, when necessary, without interference or adjustment. Durable and economical. Write today for estimates and complete information.

Sales Offices—NEW YORK · ST. LOUIS
ST. PAUL · WASHINGTON · SAN FRANCISCO · LOUISVILLE · MONTREAL
Home Office: 5105 WEST LAKE STREET, CHICAGO 44, ILLINOIS

TODAY'S ULTIMATE



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G-B MFG. CO.

Thermal Insulation For Refrigerator Cars, Tank Cars, Passenger Cars and Locomotives

NEW YORK • PHILADELPHIA • CHICAGO

ESTABLISHED 1898

TE N INSULATION ADVANTAGES

★ HIGH THERMAL EFFICIENCY
★ HIGH ACOUSTICAL EFFICIENCY
★ FIRE-PROOF
★ ROT & DETERIORATION PROOF
★ VIBRATION PROOF
★ LOWEST MOISTURE ABSORPTION
★ HIGHEST ODOR RESISTANCE
★ VERMIN-RODENT RESISTANCE

G-B ULTRALITE SAVES UP TO 1/2 THE INSULATION WEIGHT

Combined into G-B Ultralite Insulation, made from Fiberglas fibers, are weight and service factors that make it today's unequalled railway insulation. For the swift new luxury trains, in particular, the light weight of G-B Ultralite has proved of decided advantage in their construction and operation. G-B Ultralite contributes not only to lower operating cost but to a higher degree of passenger comfort and safety—and maintains full thermal and acoustical effectiveness for the life of the car. Developed exclusively as railway insulation, G-B Ultralite is manufactured with or without facing in pliable easy-to-handle forms for both passenger and refrigerator car installation.

Fiberglas Is Sold to Railroads & Car Builders by

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Wouldn't You Like to Get a Gold Dollar for 90 Cents?

USE THE HANNA STOKER AND GET THIS DOLLAR OUT OF THE COAL PILE

(Due to Hanna Distribution)

MAINTENANCE SAVINGS *Too*–
Due to Hanna Rugged Construction

OVERTIME SAVINGS *Too*–
Due to Hanna Reliability

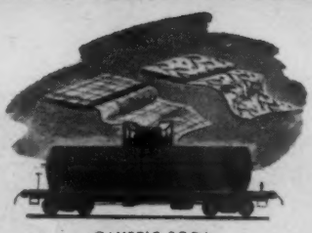
Since 1911 HANNA STOKER DEVELOPMENT has paced improvements in locomotive power, efficiency and economy

THE HANNA STOKER COMPANY

Cincinnati 27, Ohio

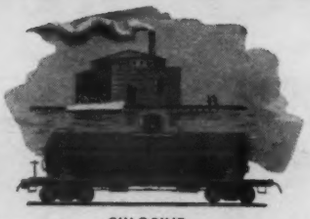
ALCOHOL

...l car, 6,000 to 10,000 gallon capacity.



CAUSTIC SODA

Heavily insulated steel car, with or without heater coils, 8,000 or 10,000 gallon capacity. Usually specially lined.



CHLORINE

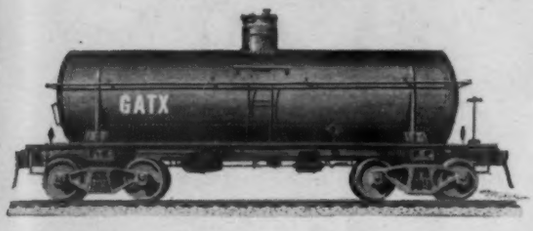
Insulated, welded car; built to withstand pressure up to 500 pounds; 15 or 30 ton capacity.

COTTONSEED OIL

Clean, steam coiled car of 8,000 gallon capacity.

FOR RENT

TANK CARS



Tank car transportation of liquids in bulk, pioneered by General American has proved its versatility, its efficiency, its economy.

The General American fleet comprises more than 37,000 specialized tank cars . . . 207 different types of tank cars . . . designed for the safe and swift hauling of an almost infinite variety of liquids.

General American's strategically located offices, plants, and repair shops keep these tank cars at your service; provide you with precisely the type of tank cars you want, *where* you want them.

If your problem is the transportation of liquids in bulk, let the nearest General American office help you.

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GENERAL AMERICAN TRANSPORTATION CORPORATION
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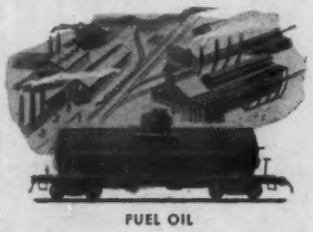
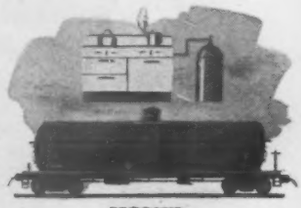


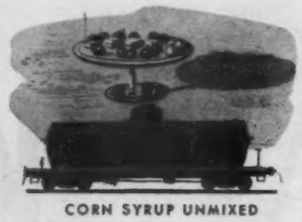
FUEL OIL

Steel car, steam coiled, 8,000 to 12,500 gallon capacity.



PROPANE

Heavily constructed car, welded and insulated. Built to withstand internal pressures to 300 pounds. Capacity 10,000 to 11,000 gallons.



CORN SYRUP UNMIXED

Clean, steam coiled with heavy truck capacity. Usually lined with aluminum paint.

LUBRICATING OIL

Steel car, with steam coils, single or multiple compartment; usually 8,000 gallon capacity.

MURIATIC ACID

Car lined with pure or synthetic rubber; 8,000 to 10,000 gallon capacity.

ACETIC ACID

Aluminum Car, 8,000 or 10,000 gallon capacity.

GASOLINE

Clean car, 6,000 to 12,500 gallons; single or multiple compartment.

ASPHALT OR TAR

Heavily steam coiled car; with 2 or more inches of insulation; steam jacketed outlet; 8,000 to 10,000 gallon capacity.

LARD

...team coiled car, usually of 8,000 gallon capacity.

WINE

Insulated car with one to six compartments. Interior coated to preserve quality.

MOLASSES

Steam coiled car with heavy capacity trucks; 8,000 gallon capacity.

SULPHURIC ACID

Heavily constructed steel car with heavy truck capacity. Equipped to unload through dome.

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LEADER IN TRANSPORTATION SEATING

Karpen's banner signifies three of the reasons why you'll find Karpen seats standard equipment in transportation vehicles everywhere. The Appearance, Comfort, and Economy built into every Karpen seat assures your passengers of a more enjoyable ride... assures you of a more profitable operation. Remember—specifiy Karpen.

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New! A Handbook on Welding Aluminum

Are you welding aluminum now? Do you plan to weld aluminum in the future? If so, this book is for you!

HERE'S a new up-to-the-minute book, "Welding Aluminum," that presents a concise, authoritative discussion of problems dealing with welding aluminum and aluminum alloys. Many new war-developed applications are described. Under a single cover, in handy usable form, you will find detailed information on 11 aluminum welding processes, from edge preparation to finishing, a comprehensive discussion of aluminum alloys and tempers, and helpful tables on properties, gauges, sizes, and strengths.

"Welding Aluminum" is clearly illustrated with 44 interesting photographs and graphs of welding operations. If you work with aluminum, you'll find "Welding Aluminum", prepared by the technical staff of the Reynolds Metals Company, an invaluable reference book.

How do you get your copy? Simply fill out the coupon on this page and mail with your check or money order for one dollar, to cover the cost of printing and mailing, to Reynolds Metals Company, 2500 South Third Street, Louisville 1, Kentucky.

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- Furnace
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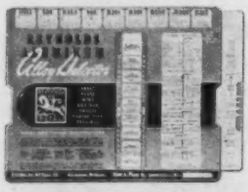

ALLOY SELECTOR

Just two settings to place at your fingertips the mechanical properties, chemical composition, physical constants, thermal treatments, and specification numbers of *18 aluminum alloys*. Price $1.00. (Check space in coupon.)

METALS WEIGHT CALCULATOR

One of the handiest calculating devices ever developed . . . simple . . . accurate . . . fast. Calculates weights of aluminum, magnesium, steel, brass, copper, and nickel. Only $.50. (Check space in coupon.)

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( ) Please send me a Reynolds Aluminum Alloy Selector. I enclose $1.00.
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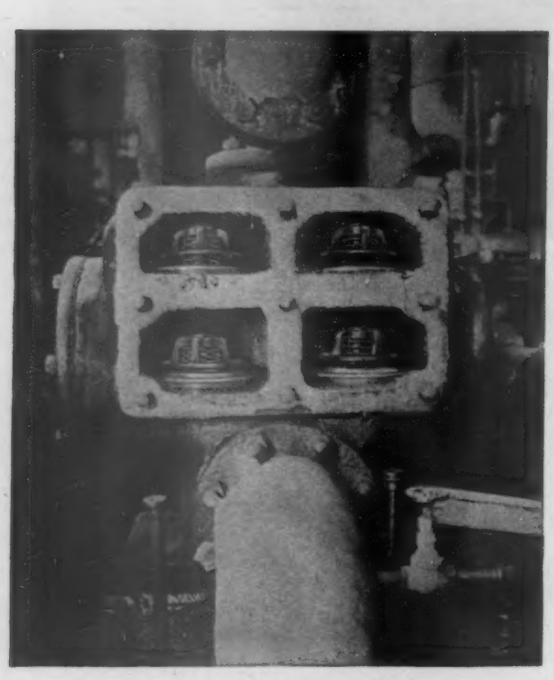
PLEASE PRINT OR TYPE CAREFULLY

KEEP PUMPS IN SERVICE WITH DURABLA VALVES



- **REHABILITATE OLD PUMPS**
- **REFIT THEM FOR NEW SERVICE**
- **DURABLA - EQUIP NEW PUMPS**

The records of the DURABLA Engineering Department show numerous examples of old reciprocating pumps which have been rehabilitated or adapted to new and severe service by fitting them with DURABLA PUMP VALVE UNITS.

At a time when most types of mechanical equipment are difficult to obtain — and when maintenance man-power is not too plentiful — DURABLA Valves can be the answer. They will keep some pump in action or refit it for another service.

The adaptability and long term reliability of all types of reciprocating pumps are primarily dependent on their valves. DURABLA Valve units, widely used for replacements on every type of reciprocating pump may prevent costly delays or make it unnecessary to delay operations while awaiting new equipment.

11 Standard Sizes of DURABLA Metal Pump Valve Units to Meet Over 300 Installation Requirements.

Address DURABLA Engineering Department For Information and Bulletin: Reference 611A

*Patent Numbers 2090486, 2117504

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PASSENGER PROGRESS IS PROMOTED BY

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LIGHT WEIGHT ALLOY STEEL PISTONS AND UNIVERSAL SECTIONAL BULL AND PACKING RINGS *mean* . . .

. . . higher locomotive availability . . . less fuel consumption . . . longer wear for cylinder components . . . longer engine runs . . . better counterbalance conditions . . . all because they're 50% lighter than conventional types and reduce reciprocating weight. They're more economical, in maintenance and operation.

UNIVERSAL WHEEL CENTERS *mean* . . .

. . . greater radial, lateral, and transverse strength . . . minimized flattening between spokes . . . no crowning . . . fewer loose tires . . . more permanent pressure fits . . . readily counterbalanced . . . all because they're scientifically designed for the job and carefully produced.

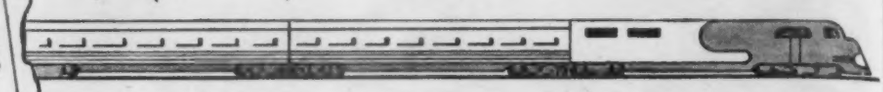
LFM's Engineering and Shop Facilities are available at all times to assist your mechanical department in locomotive modernization programs.

Established in 1872. Pioneers in the Development of the Light Weight Piston and Combination Sectional Packing.

THE LOCOMOTIVE FINISHED MATERIAL CO.

ATCHISON, KANSAS ★ NEW YORK CITY ★ CHICAGO, ILL.

All aboard... to music!



Santa Fe Trains To Get Radio, Music Systems

In announcing forthcoming installation of musical wire reproducers, radio and public address systems on their passenger trains, Fred G. Gurley, president of the Atchison, Topeka, and Santa Fe Railway, yesterday disclosed that individual outlets will be placed in sleeping cars.

Each roomette, bedroom, compartment, and drawing room will be equipped with push-button selector, a loud speaker, and volume control, so that occupants may have their choice of radio or wire-reproduced popular or semi-classical music, Mr. Gurley stated. A pilot lamp, lighting automatically when the announcement system is in use, will be installed so that passengers may turn the system on if they so desire.

As a forerunner of this innovation, wire reproducing units providing programs of various types of music, will be placed on the Santa Fe dining car 1450 when it goes into transcontinental service on March 10. As soon as equipment and labor are available, the railroad president declared, similar installations will be made on both new and old dining cars, as well as sleeping, chair, and club-lounge cars.

Speakers will be placed in the ceiling of these cars to provide an even distribution of low-level sound throughout the car. The volume will be set at an advantageous point for both the listener and conversationalist, it was stated.

Farnsworth Television and Radio Corporation of Fort Wayne, Indiana, designed the over-all integrated system.

Reprinted from the Chicago Journal of Commerce, March 4, 1946.

New Program Distribution Systems Make Rail Travel More Pleasant; Will Increase Passenger Traffic!

Systems Produced by Pioneers in Quality Sound Reproduction, Communications and Television.

Music now brings its magic to the railway passenger—and gives railroads another tool with which to sell travel by rail!

In announcing the first modern electronic program distribution systems for railroads, the Farnsworth Television & Radio Corporation takes a logical step forward. Known for its superlative phonograph-radios, including The Capehart, for its pioneering in the fields of tonal reproduction, television and other forms of electronics, Farnsworth now extends its engineering knowledge and manufacturing skill to the field of passenger entertainment.

These new systems will meet the varying tastes of passengers and the specific operating conditions of individual roads. Based upon the knowledge secured from railroad-conducted surveys, the most complete Farnsworth system provides four channels for individual selection: one for classical and one for popular music; a third for radio programs; and a fourth for train announcements and travel talks. More simplified Farnsworth Systems are also available.

Farnsworth engineering has met and overcome the problems peculiar to pleasing sound reproduction in passenger cars, including the need for uniform, low-level distribution and automatic compensation for varying ambient noise levels.

With these comprehensive, flexible systems, railroads can now provide passengers with the same standard of entertainment and comfort they expect in their own homes. Farnsworth Television & Radio Corporation, Fort Wayne 1, Indiana.

Farnsworth

MAKERS OF

THE CAPEHART • THE PANAMUSE BY CAPEHART

Other Products Include: Farnsworth Radio and Television Receivers and Transmitters • Aircraft Radio Equipment • Farnsworth Television Tubes
Halstead Mobile Communications and Traffic Control Systems for Rail and Highway • The Farnsworth Phonograph-Radio

You get all these features . . . and more! in I. B. LOCOMOTIVE CRANES
POSITIVE RESPONSE TO AIR-OPERATED CONTROLS
ANTI-FRICTION BEARINGS AT ALL ESSENTIAL POINTS
ROTATING AND TRAVEL FRICTION DISC CLUTCHES WITH 1-POINT ADJUSTMENT
SAFETY CLEARANCE 14 INCHES BETWEEN ROTATING BED AND CAR BODY
ONE-PIECE CAST STEEL BED
MONITOR-TYPE CAB FOR 360° VISIBILITY

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INDUSTRIAL BROWNHOIST CORP. • BAY CITY, MICH. • District Offices: New York, Philadelphia, Cleveland, Chicago • Agencies: Detroit, Birmingham, Houston, Denver, Los Angeles, San Francisco, Seattle, Vancouver, B.C., Winnipeg, Canadian Brownhoist Ltd., Montreal, Quebec.

FABREEKA

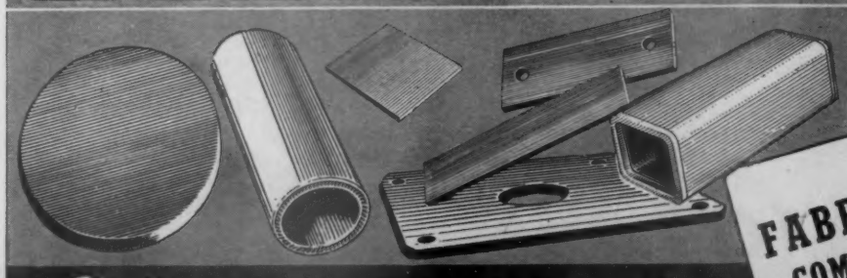
Passenger Comfort

12 years of proven satisfaction in the trucks and platforms of Railway Passenger Equipment have resulted in a general acceptance of the use of FABREEKA at the following points for greater passenger comfort with safety, dependability and long life.

Six Important Applications of FABREEKA In Passenger Cars

- FABREEKA Side Bearing Pads at Body Side Bearings
- FABREEKA Journal Box Pads on top of Journal Box
- FABREEKA Buffer Stem Sleeves on Buffer Stems
- FABREEKA Center Plate Pads between Truck Center Plate Casting and Bolster
- FABREEKA Equalizer Coil Spring Pads on top of Equalizer Coil Springs
- FABREEKA Spring Plank Pads at Swing Hanger Bearings

It Pays To Specify FABREEKA



Used in RAILWAY PASSENGER CARS, Trucks and Platforms . . . LOCOMOTIVES, Steam and Diesel Electric . . . TRACK CONSTRUCTION, on Bridges, Crossings, Curves, Turntables and Track Scales.

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RAILWAY AGE

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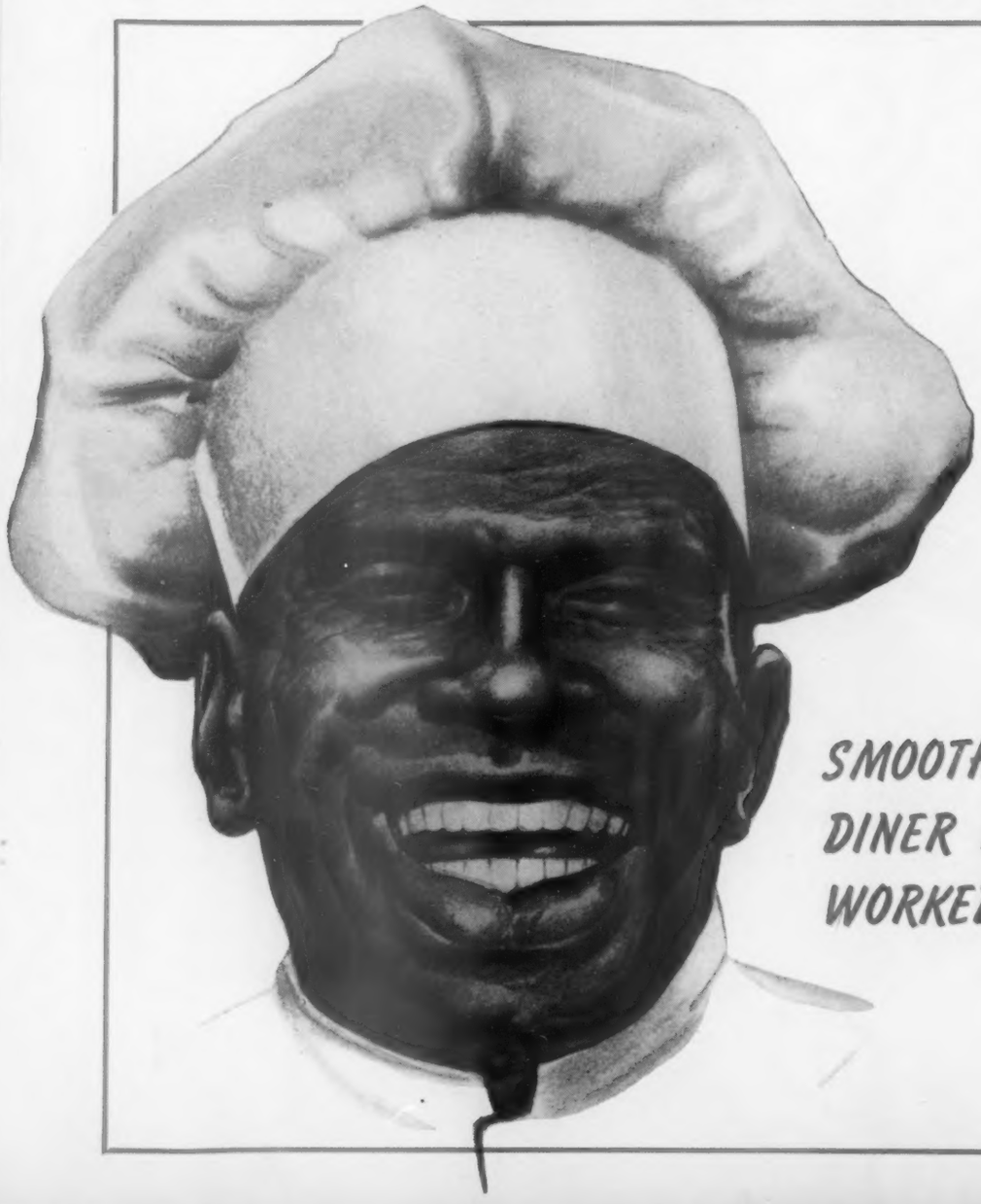
ORDER
ALL FLYING COFFEE CUPS
GROUNDED

Equip all diners

Equip all diners with

WAUGHMAT *Twin Cushions*

ELIMINATE JERKS AND JARS



"SHE'S THE SMOOTHEST RIDING DINER I EVER WORKED ON"

Sloshing coffee cups, dishes sliding across the table, spilling water glasses are all discomforts that need not happen. Dishes, in Twin-Cushion equipped diners, don't act that way.

Practically all diners now under construction will have Waughmat Twin-Cushions. Existing diners, too, are being Twin-Cushion equipped. All should be.

Today, railroad passengers want and expect 100% riding comfort. They do not want "½ Way Comfort".

Air conditioning and modern appointments are essential, but they are not enough. For 100% comfort, cars must be cushioned with Waughmat Twin-Cushions.

Twin-Cushion your existing cars . . . head-end cars, coaches, chair cars, sleepers . . . and provide maximum riding comfort on *all* your cars.

for 100% Comfort

APPLY TO
NEW OR EXISTING CARS

Progressive Railroads

EQUIPPING THEIR NEWEST AND FINEST PASSENGER CARS WITH TWIN CUSHIONS:

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NEW HAVEN
NORTHERN PACIFIC
NORTH WESTERN
TEXAS & PACIFIC
PERE MARQUETTE
GREAT NORTHERN
CHESAPEAKE & OHIO
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ST. LOUIS-SAN FRANCISCO
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WABASH • SANTA FE
GULF MOBILE & OHIO
BOSTON & MAINE
ILLINOIS CENTRAL
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SEABOARD • RIO GRANDE
MISSOURI, KANSAS, TEXAS
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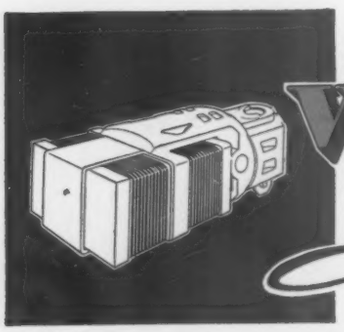

WAUGHMAT ★
Twin Cushions
ELIMINATE JERKS AND JARS

★ **CAN BE APPLIED TO OLD OR NEW CARS**

WAUGH EQUIPMENT COMPANY, New York · Chicago · St. Louis · Canadian Waugh Equipment Company: Montreal

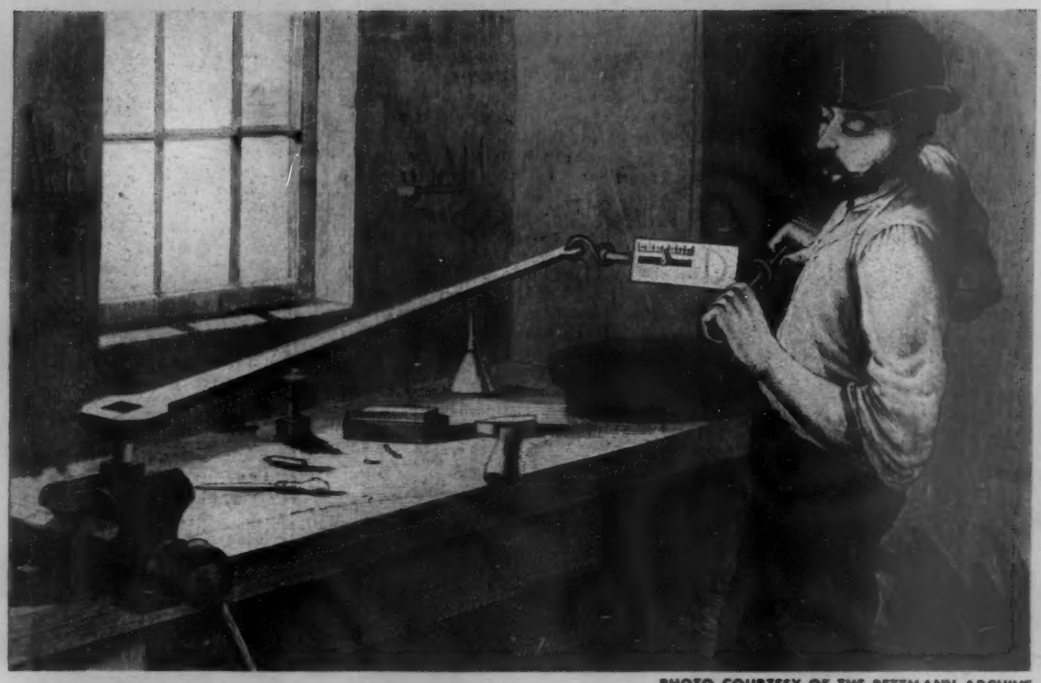

PHOTO COURTESY OF THE BETTMANN ARCHIVE

FROM A METAL-MASTER'S "FAMILY ALBUM"

When "Physical Labs" operated like this . . .

Quality Control was "STANDARD" practice

A strong long-handled wrench, a good spring balance, and a firm but delicate hand was the only equipment required in this "testing machine" of 1874. Yet even then, Standard Steel recognized the importance of quality control, and had sought metallurgical counsel from a leading chemist of the day, to solve a production problem.

Standard early recognized the importance of controlling production processes from the first stages, and in order to adequately supervise the all-important initial steps, installed an open hearth furnace in 1895. In recent years, extensive research on heat treatment has greatly increased the capacity of Standard forgings and castings to meet the demands of rigorous service.

To simplify purchasing and assure uniformly good quality, "Standardize on Standard" for your forgings and castings. The Baldwin Locomotive Works, Standard Steel Works Division, Burnham, Penna., U. S. A. Offices: Philadelphia, New York, Chicago, St. Louis, Washington, Boston, San Francisco, Cleveland, Detroit, Pittsburgh, Houston, Birmingham, Norfolk.

BLW THE BALDWIN GROUP **BALDWIN**

FORGINGS AND CASTINGS

"STANDARDIZE ON STANDARD" FOR YOUR FORGINGS AND CASTINGS

26 railroads have thus far specified Hyatt Roller Bearing Journal Boxes for their new postwar passenger cars.

PROGRESS AND HYATT HAND IN HAND!

With the first Hyatt applications to passenger cars over two decades ago we were mindful of the day when roller bearing journal boxes would be standard equipment.

So over the years we designed and built accordingly keeping pace with the needs for greater speed with safety, smoother riding and improved passenger comfort.

At the same time we kept expanding our manufacturing facilities in anticipation of the demands which were bound to follow in the wake of the many complete trains and individual cars we have been equipping right along on many roads.

Therefore, today, at Hyatt our successful records of performance and our accumulated experience is reflected in a mass production assembly line, producing roller bearing journal boxes on a scale in true keeping with the modernization plans of the most progressive railroads and car builders.

This story of widespread acceptance of Hyatt equipped journal boxes, built around Hyatt know-how, is told in a folder we have just prepared "A Little Journey Along a Production Line." Would you like a copy? Hyatt Bearings Division, General Motors Corporation, Harrison, N. J.

HYATT ROLLER BEARING RAILROAD JOURNAL BOXES

Experience Recommends

A. A. R. Approved

PEERLESS H-1-B Draft Gear

For protection of freight cars and lading under all traffic conditions

1. **Smooth Action**
2. **Positive Release**
3. **Low Recoil**
4. **High Absorption**
5. **Light Weight**—*permitting heavier payloads*
6. **Long Life**—*because of rugged construction*
7. **Trouble Free**—*resulting from sound engineering and careful manufacture*

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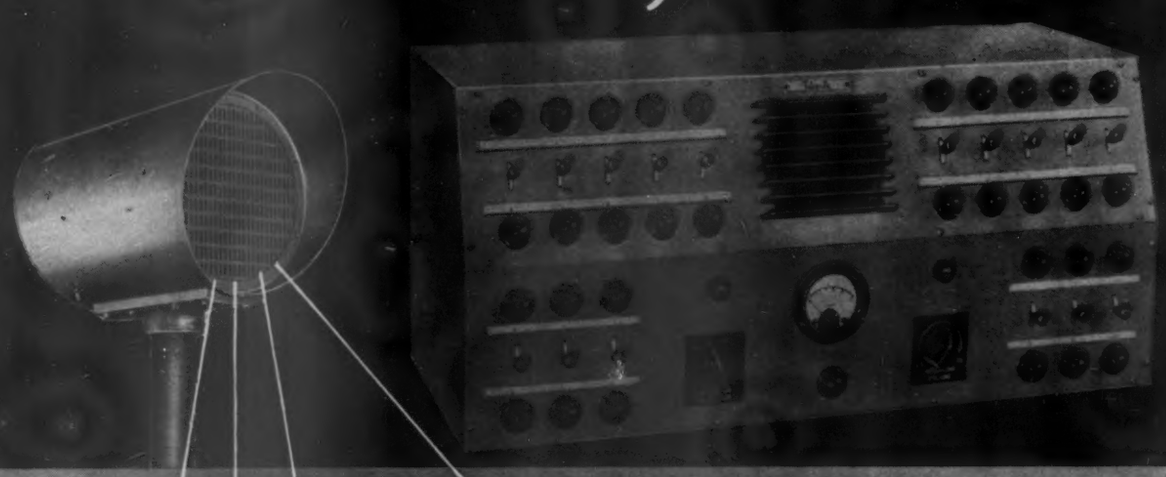
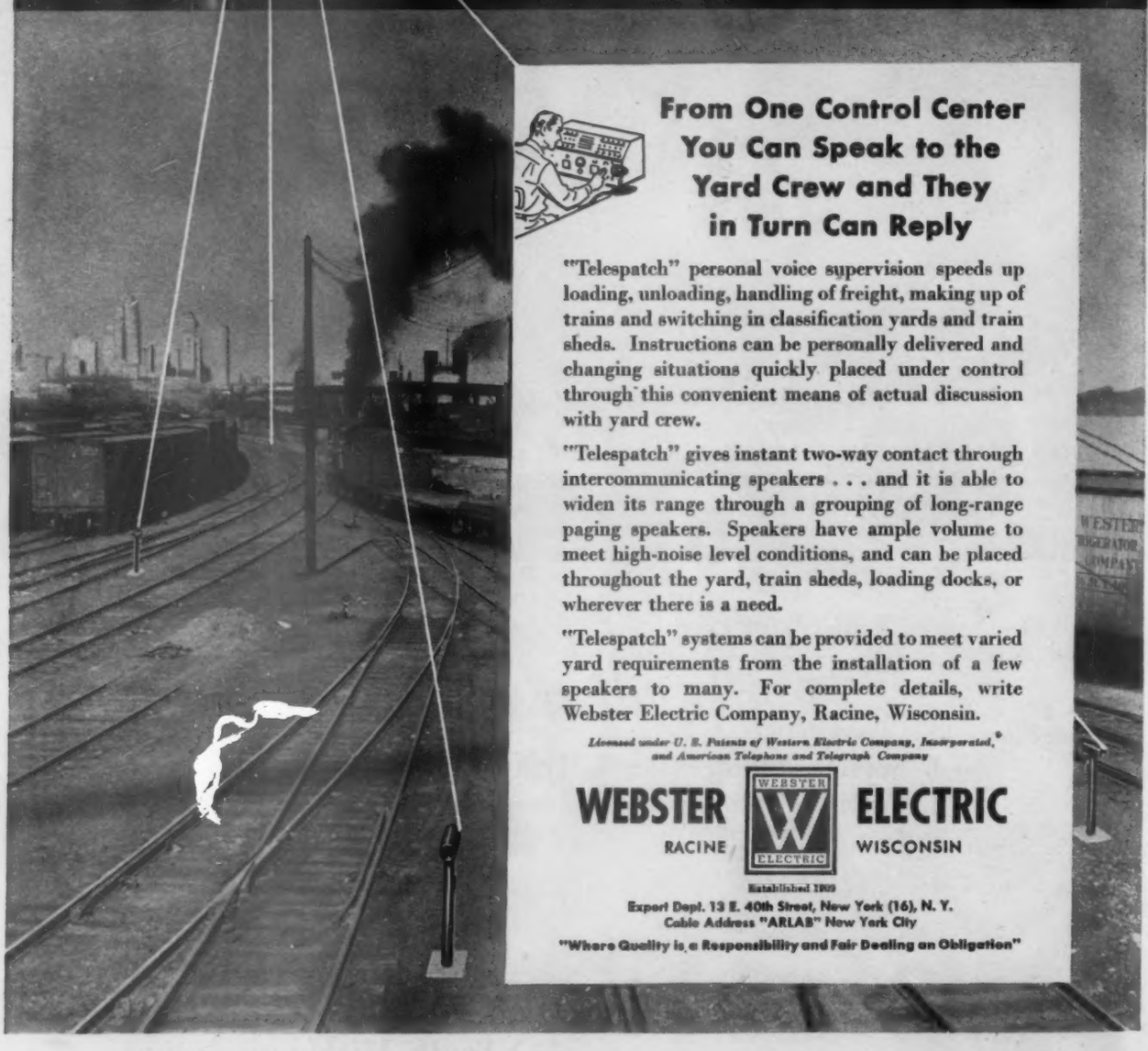
Better Control of Yard Operations is Possible with } WEBSTER ELECTRIC Telespatch





From One Control Center You Can Speak to the Yard Crew and They in Turn Can Reply

"Telespatch" personal voice supervision speeds up loading, unloading, handling of freight, making up of trains and switching in classification yards and train sheds. Instructions can be personally delivered and changing situations quickly placed under control through this convenient means of actual discussion with yard crew.

"Telespatch" gives instant two-way contact through intercommunicating speakers . . . and it is able to widen its range through a grouping of long-range paging speakers. Speakers have ample volume to meet high-noise level conditions, and can be placed throughout the yard, train sheds, loading docks, or wherever there is a need.

"Telespatch" systems can be provided to meet varied yard requirements from the installation of a few speakers to many. For complete details, write Webster Electric Company, Racine, Wisconsin.

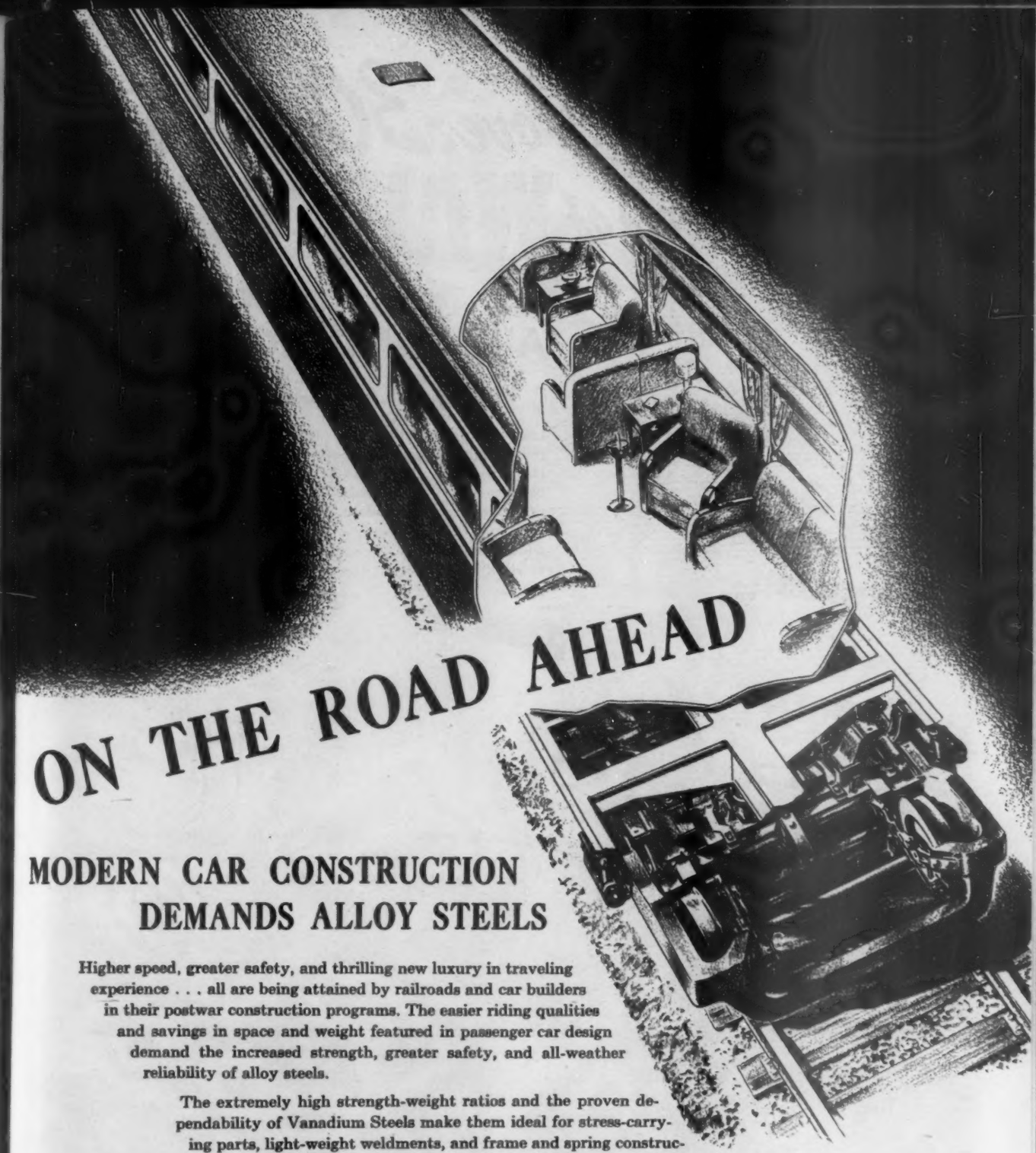
Licensed under U. S. Patents of Western Electric Company, Incorporated, and American Telephone and Telegraph Company

WEBSTER RACINE / WEBSTER ELECTRIC **ELECTRIC** WISCONSIN

Established 1909

Export Dept. 13 E. 40th Street, New York (16), N. Y.
Cable Address "ARLAB" New York City

"Where Quality is a Responsibility and Fair Dealing an Obligation"



ON THE ROAD AHEAD

MODERN CAR CONSTRUCTION DEMANDS ALLOY STEELS

Higher speed, greater safety, and thrilling new luxury in traveling experience . . . all are being attained by railroads and car builders in their postwar construction programs. The easier riding qualities and savings in space and weight featured in passenger car design demand the increased strength, greater safety, and all-weather reliability of alloy steels.

The extremely high strength-weight ratios and the proven dependability of Vanadium Steels make them ideal for stress-carrying parts, light-weight weldments, and frame and spring construction—to meet these new-day passenger car design requirements.

Detailed information and specifications covering many applications of Vanadium Steels for railroad needs are available in our Technical Literature. Copies will be supplied promptly on request. In addition, our metallurgical staff, working in close cooperation with both the railroads and equipment builders, stands ready to show you how *alloy steels do the job better* in modern car as well as locomotive construction.

MAKERS OF

VANCORAM

FERRO ALLOYS AND METALS

VANADIUM CORPORATION OF AMERICA

420 LEXINGTON AVENUE, NEW YORK 17, N. Y. • DETROIT • CHICAGO • CLEVELAND • PITTSBURGH

SINCE 1935... *over 30 railroads have become users of* WAUKESHA

Engine Driven AIR CONDITIONING and GENERATOR Equipment

Look right down that list of 32 railway users. It's significant! Four railroads in 1935. Seven more in 1936. And . . . . year after year . . . railroad after railroad has been added. That's proof of Waukesha performance. Proof positive . . . that Waukesha independent engine-driven units supply modern, deluxe air conditioning and lighting for every car . . . automatically . . . on demand. That Waukesha gives trains added payload, faster schedules, lower operating costs. Ask any one or all of these railroads—or write Waukesha Engineers for details.

SINCE 1935
* Chicago & North Western
* Illinois Central
* Missouri Pacific
* Texas Pacific

SINCE 1936
Canadian Pacific Railroad
* Chicago Milwaukee St. P. & P.
* Chicago Rock Island & Pacific
* Mpls. St. Paul & Sault Ste. Marie
* St. Louis & San Francisco
* Southern Pacific
* Union Pacific

SINCE 1937
* Chicago St. Paul Mpls. & Omaha
* Gulf Mobile & Northern
* Northern Pacific
* Texas & New Orleans

SINCE 1938
Southern Pacific of Mexico
* Mobile & Ohio

SINCE 1939
* Pullman Company

SINCE 1940
* Chicago Burlington & Quincy
* Denver & Rio Grande Western
* Minneapolis & St. Louis

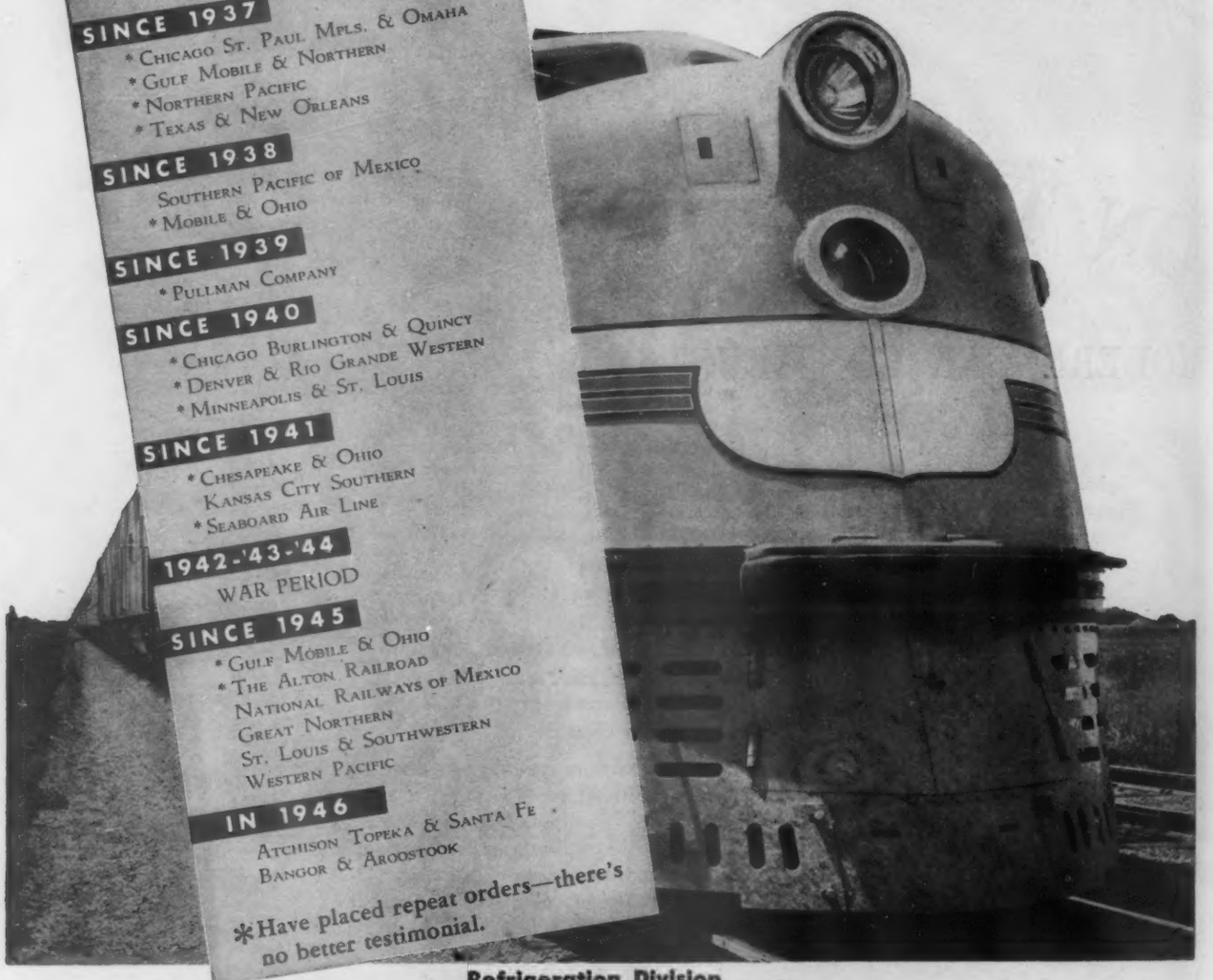
SINCE 1941
* Chesapeake & Ohio
Kansas City Southern
* Seaboard Air Line

1942-'43-'44
WAR PERIOD

SINCE 1945
* Gulf Mobile & Ohio
* The Alton Railroad
National Railways of Mexico
Great Northern
St. Louis & Southwestern
Western Pacific

IN 1946
Atchison Topeka & Santa Fe
Bangor & Aroostook

*Have placed repeat orders—there's no better testimonial.



Refrigeration Division

WAUKESHA MOTOR COMPANY

WAUKESHA • WISCONSIN

Largest Builders of Mobile Engine-Driven Refrigeration and Generator Equipment

SERVING THROUGH SCIENCE

Comfort Engineered
for Sitting and Sleeping

It "Gives"
only where you touch it!

Did you ever plunk down on a sofa next to someone...only to find him "falling" toward you, off balance?

That happens when the whole "innards" of a sofa sag between different weights. But it's something that can't happen with Koylon Foam!

As you can see from the pictures, Koylon Foam provides *independent suspension*..."gives" only where you touch it. You can credit Koylon's amazing air-buoyancy for this.

Actually Koylon is 85% air. It "breathes"... absorbs air in millions of tiny, interconnecting cells of resilient latex—releases it on contact with the body.

Here's foolproof evidence of the resilience that gives Koylon Foam its *matchless comfort*. And it's another reason why we say: If you sell "seats"—or "sleep"—better sell Koylon Foam!

"U.S." Koylon FOAM

"U. S." KOYLON FOAM DIVISION • MISHAWAKA, INDIANA

UNITED STATES RUBBER COMPANY

new

Forged I Beam Equalizer .... 395 lbs. lighter—yet stronger

Car designers and engineers, recognizing the I Beam section as the structural form affording highest load-carrying strength with minimum weight, have long considered its application to equalizer bar design.

Railroad men, conscious of weight-saving, had believed this improvement impractical because of certain limitations in metal-working processes. Canton Drop has, however, accomplished this extraordinary metal-working feat by a closed-die forging process in conjunction with huge drop hammer equipment.

New design, made possible by skillfully constructed impression dies which control the grain flow and metal structure, and improved heat treating methods give the I beam equalizer the strength and safety heretofore obtained only in parts of much greater cross sectional area. Weight per equalizer is reduced from 30% to 50% on certain types and sizes. Approved and adopted by one of the leading railroads, this modern I beam equalizer is destined to rate a definite specification on car construction blue prints.

Canton's design and production engineers can render valuable service on your product improvement plans, making available complete die construction, forging, heat treating, and rough and finished machining facilities. Your problems will receive prompt attention.

PATENT APPLIED FOR

ACTUAL SIZE cross section (above) of Forged I Beam Equalizer illustrated below.
Weight: 405 pounds. An equalizer of conventional design and equal strength weighs 800 pounds.

AREA OFFICES

NEWARK, N. J.—1410 Raymond Commerce Bldg.
CHICAGO, ILL.—2400 West Madison Ave.
SEATTLE, WASH.—3854 25th Ave. West

CANTON DROP

forging & manufacturing co.
CANTON 1, OHIO

RAILROAD RADIO...*tuned to your needs*

Northern Pacific Tests Western Electric Radio

The Tacoma Division of the Northern Pacific is one of the toughest sections of the country for railroading. Here the Northern Pacific in cooperation with Western Electric and its design teammate, Bell Telephone Laboratories, made its first trial of radio communications.

Western Electric equipment was installed and tested on the round trip runs of two crack freights between Auburn and Yakima, Washington, and between Seattle, Washington and Portland, Oregon.

N. P. Official Sees Running Time Cut

As a result of time saved in cutting in helpers, picking up or setting out cars, swinging into sidings, starting and stopping, and dropping or picking up swingmen, an official of the Northern Pacific stated that running time on the single track Tacoma Division might be cut 10% to 15% by the use of railroad radio.

Equipment used in the tests was installed in two 5400 hp diesel electric locomotives, two steam locomotives, a private business car and the station at Auburn, Wash.

WHEN you install a railroad radio system, you want high quality equipment specifically designed for railroad service. To produce such equipment requires not only the ability to build a good product but also understanding of railroad communications problems.

Western Electric, the world's leading manufacturer of telephone equipment since 1877, is especially qualified to meet your needs. In 1917 Western Electric demonstrated the first two-way radio telephone between plane and ground—in 1930, installed one of the first mobile police radio systems—in 1931, pioneered in marine radio telephone. During the recent war Western Electric was a leading producer of airborne and tank radio for the armed services. *Western Electric has the ability.*

Of equal importance to you, Western Electric has learned railroad communications thoroughly during its 40 years of producing train dispatching equipment as well as through years of application of other Western Electric telephone circuits and products in railroad communications.

For expert advice in planning a tailor-made railroad radio system, get in touch with the nearest representative of the Graybar Electric Company, distributors of Western Electric radio equipment. Look for his address in your local telephone directory, or write to Graybar, 420 Lexington Avenue, New York 17, N. Y.

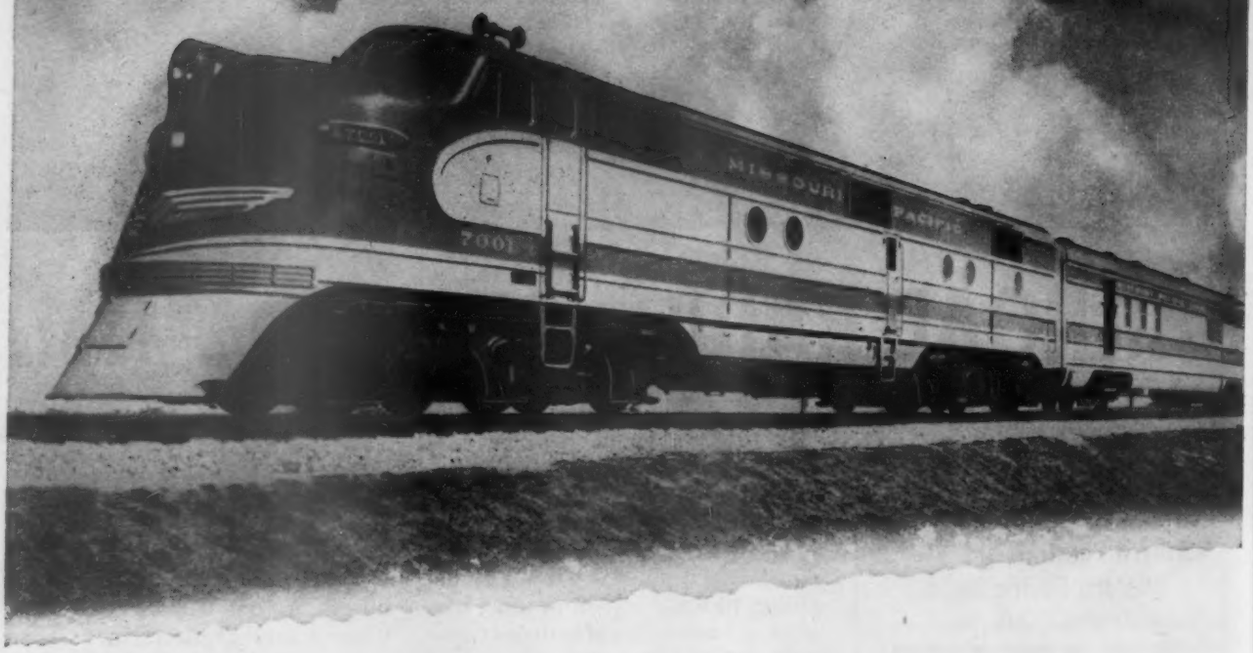
Western Electric

Distributed by GraybaR
OFFICES IN 90 PRINCIPAL CITIES

Western Electric

— QUALITY COUNTS —

Onward with "The Eagle"



●In its daily 477 mile run between St. Louis and Omaha, the "Missouri River Eagle" of the Missouri Pacific Lines has established an outstanding record carrying capacity passenger loads. Few trains can equal the dependable 'on time' performance of these splendid trains. Many features of modern railroading on the progressive Missouri Pacific Railroad make these records possible.

Playing an important part is the vital factor of lubrication. Sinclair GASCON DIESEL OIL is used to lubricate the Diesels of the "Missouri River Eagles." In wide service this oil has made a high record for performance and economy.

GASCON, through inherent solvent action, keeps rings and pistons clean. Its wear-prevention qualities hold down costly replacements.

For counsel on lubrication problems Sinclair engineers are at your service.

SINCLAIR RAILROAD LUBRICANTS

SINCLAIR REFINING COMPANY, *RAILWAY SALES*, NEW YORK • CHICAGO • SAINT LOUIS • HOUSTON

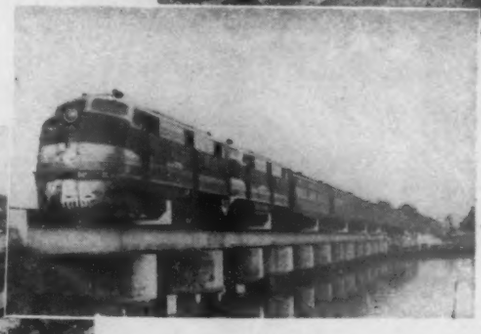
"HSC" BRAKE

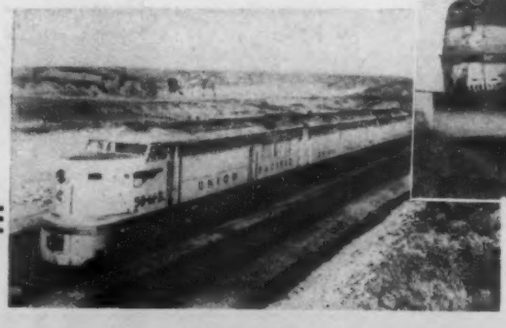
High Speeds

Harnessed for Passenger Comfort

FROM the original streamliner down to the gleaming, light weight equipment now rolling off the production lines, the "HSC" Brake has played a vital role in achieving maximum passenger comfort and safety. This modern retardation control provides smooth, effortless slowing and stopping under all speed conditions. Its rapid deceleration is important in maintaining high average speeds in today's fast passenger service.

Modern, light weight passenger car equipment is only as good as its air brakes. The "HSC" Brake is standard equipment on many of the country's foremost high speed trains, both steam and Diesel powered.





The New York Air Brake Company

420 Lexington Ave., New York 17, N.Y. Plant: Watertown, N.Y.

Innerseal the modern
waterproof weather stripping
IN STANDARDIZED SIZES
Nearly a century of service has given BRIDGEPORT FABRICS the "know-how" in modern waterproof weather stripping.
Today it's "Standardized Sizes". To facilitate delivery of large orders and replacements as well, Innerseal now comes in a variety of standard sizes . . . making it easy for you to design your product with Innerseal protection and avoid the "special order" delays.
Only BRIDGEPORT FABRICS' built-in, rustless, spring wire construction, in live sponge rubber affords complete protection against all types of weather.
Plan today to install Innerseal in one of the standardized sizes. Write now for additional information and samples of Innerseal for
• Aircraft • Ships • Cars & Trucks
• Railways • Homes • Refrigeration
Inner seal
WEATHER STRIPPING
BRIDGEPORT FABRICS, INC.
Established 1837
BRIDGEPORT CONNECTICUT

THIS LUXURY DESERVES THE ADVANTAGES OF THE *New "D-R"* V-BELT DRIVE

To fully capitalize on the luxury afforded here, proper lighting and adequate air conditioning are vitally necessary. Both are most efficiently provided with the use of Dayton "D-R" V-Belt under-car Drives.

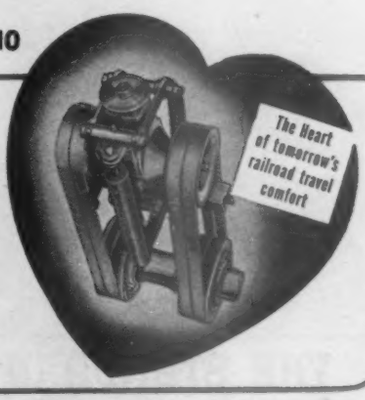
And, something new has been added to this drive. It is the new Dayton "D-R" V-Belt. This belt, incorporating years of war-born research, stronger fabrics, new compounds and new construction principles, is designed to give well over 150,000 miles of trouble-free service. Trouble-free in spite of the cold, snow and ice of winter, and the heat, dust and dirt of summer.

Now used on over twice as many air-conditioned cars as any other drive, the new Dayton "D-R" V-Belt makes possible the utmost in under-car drive dependability. Write today for complete information.

THE DAYTON RUBBER MANUFACTURING CO. • DAYTON 1, OHIO

Advantages of the Dayton "D-R" V-Belt Axle Drive

1. Quiet and smooth performance with high availability—in 15 years a mechanical failure due to V-Belts has never been reported.
2. Provides a flexible, cushioned connection between the car axle and the driven unit that protects generators and other equipment should a mechanical failure occur.
3. It is convenient and economical to install . . . no complicated or expensive truck changes are necessary . . . no special axles are necessary.
4. Duplicate equipment is not necessary to take care of emergencies—when wheel changes must be made, only the axle pulleys need to be removed.
5. It greatly reduces maintenance cost on mechanical equipment as well as on the drives.
6. It imposes a minimum weight on the car axle.
7. Easy and simple to install, dependable in operation, and insures uninterrupted performance.



Railroad V-Belts by **Dayton Rubber**

THE MARK OF TECHNICAL EXCELLENCE IN NATURAL AND SYNTHETIC RUBBER

VIRGINIAN

New Steam Power—

EQUIPPED WITH . . .

ALL the Virginian Railway Alleghany articulated type locomotives, delivered during 1945, and the more recently built Berkshire 2-8-4's are fired by Standard Stokers. Each group of locomotives has a particular assignment in present day freight movement . . . important too . . . both types of motive power through Standard Stoker firing technique are assured superior road performance under varied operating conditions.

THE STANDARD STOKER COMPANY, INC

NEW YORK • CHICAGO • ERIE • MONTREAL

PREFERRED FOR NEW ROLLING STOCK

The 100% acceptance of journal roller bearings for practically all classes of new rolling stock is not the result of quick decisions by railroad men. It is the outgrowth of the first successful anti-friction journal application on the Pennsylvania over 25 years ago by SKF, pioneers in this field.

SKF has kept abreast of rapid developments on the railroads since those early days. That is why more than 10,000 SKF journal roller bearings have been specified by American railroads for application on all types of new rolling stock during the last year.

6173

SKF INDUSTRIES, INC., PHILA. 32, PA.

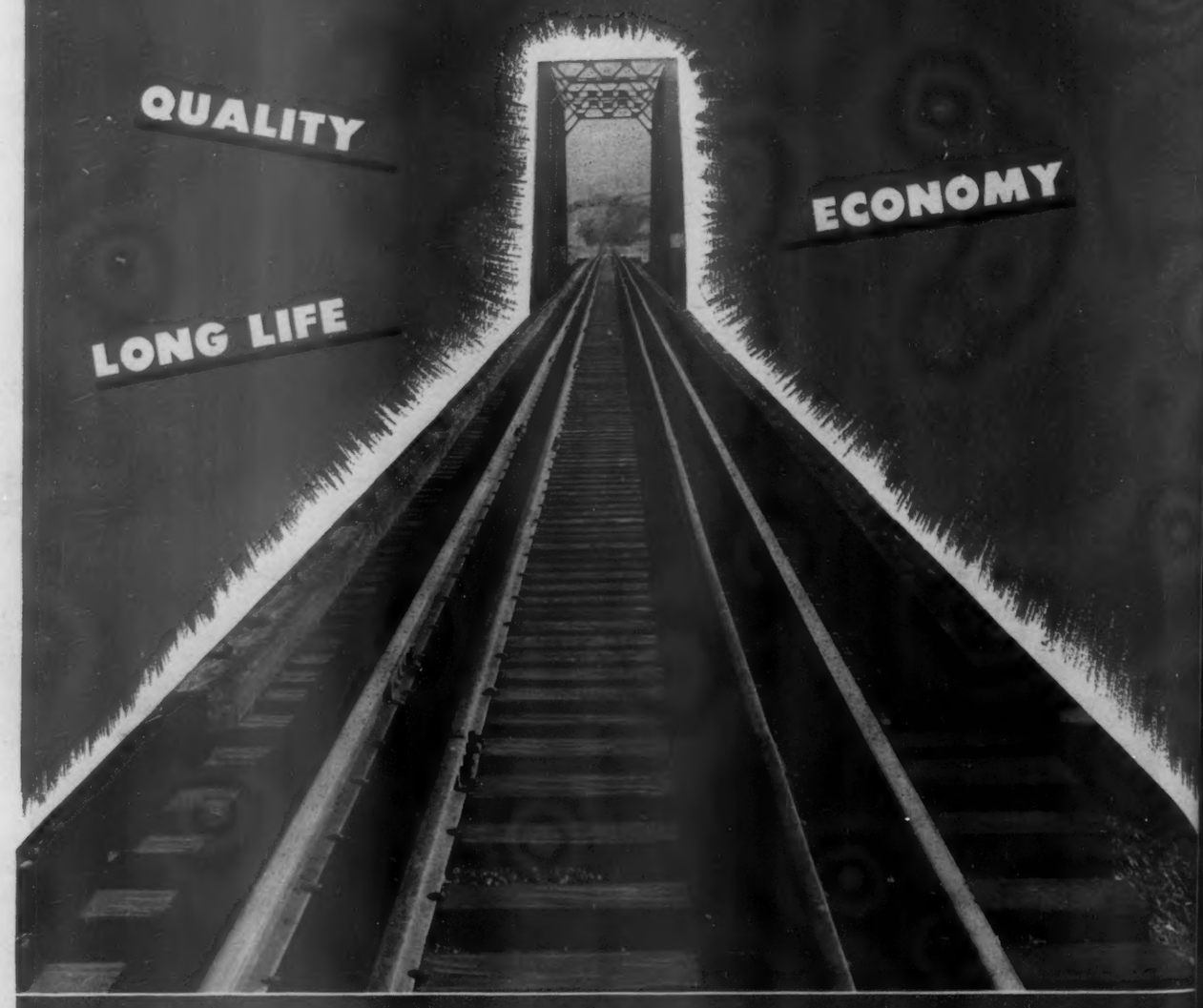
Amcreco

Creosoted products

QUALITY

ECONOMY

LONG LIFE



ADZED AND BORED CROSS TIES • BRIDGE TIES

AMERICAN CREOSOTING COMPANY
INCORPORATED

COLONIAL CREOSOTING COMPANY INCORPORATED

AMCREO LOWRY PROCESS CREOSOTED

GEORGIA CREOSOTING COMPANY INCORPORATED

ADDRESS INQUIRIES TO CHICAGO, ILL., OR LOUISVILLE, KY.

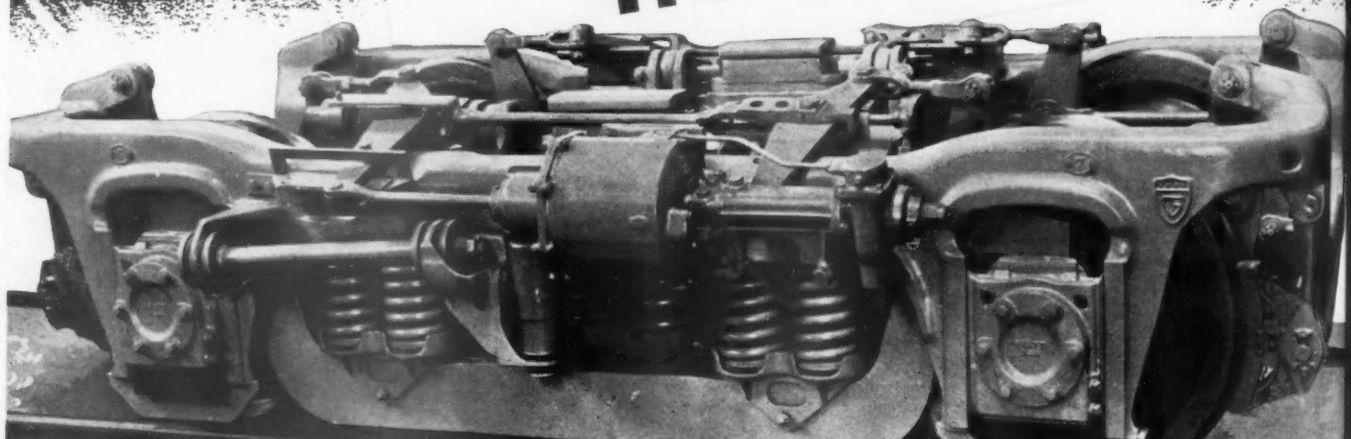
PILES • FRAMED BRIDGE TIMBERS

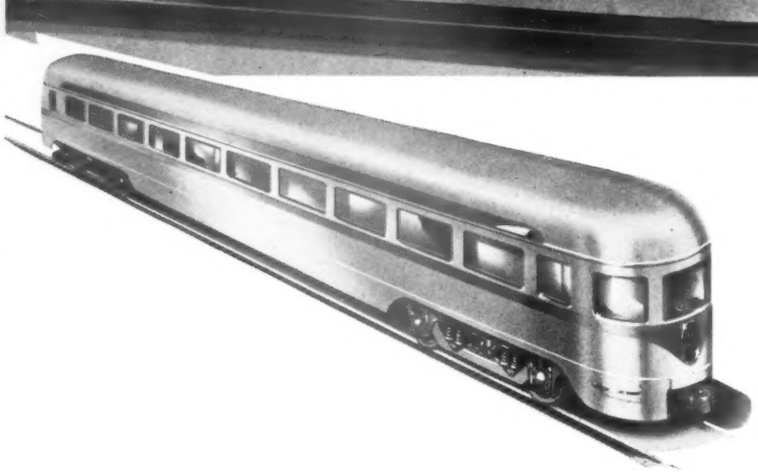
Higher Speeds
with
Modern Trains
THE DIESEL-POWERED NATIONAL LIMITED, B&O's WASHINGTON-ST. LOUIS TRAIN
HIGHER SPEEDS with MODERN TRAINS require higher track standards which include adequate anchorage with Dependable RAIL ANCHORS
THE P. & M. CO.
CHICAGO • NEW YORK • DENVER CLEVELAND • ST. PAUL
WASHINGTON • ST. LOUIS BOSTON • SAN FRANCISCO

FOR SUPERIOR P

Specify COMMONW

Passenger Car Trucks . . .





The advanced design of COMMONWEALTH 4-Wheel Passenger Car Trucks assures the best possible riding qualities at high speeds, freedom from vibration and lateral sway, and insures greater passenger comfort and safety.

This modern truck utilizes a Commonwealth one-piece alloy cast steel truck frame, bolster, and spring plank or bolster roll stabilizer —providing greater strength with minimum weight, and utmost serviceability at lowest maintenance expense.

GENERAL STEEL

ORPERFORMANCE

NWEALTH

and

One-Piece, Cast Steel Platform Center Sills

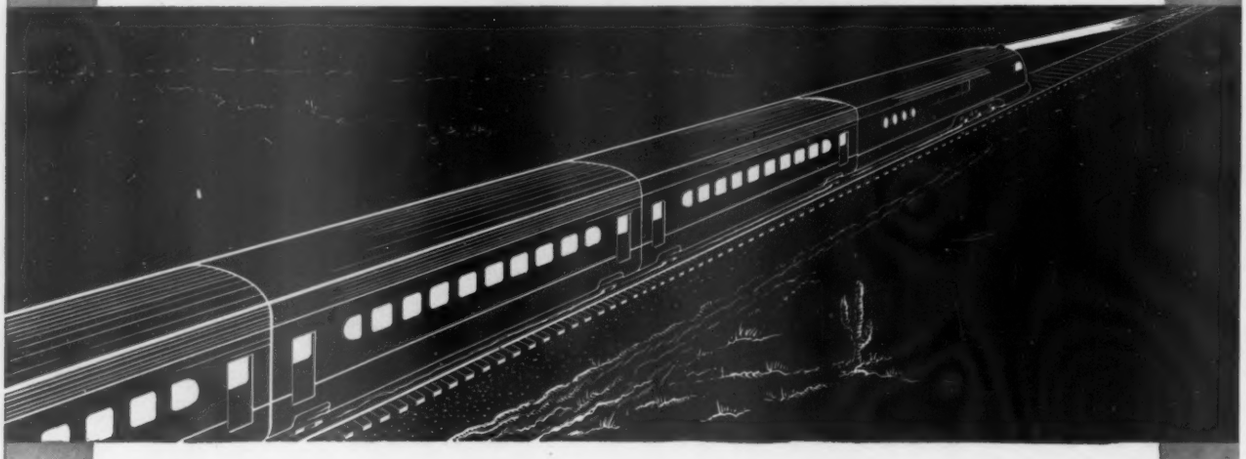
COMMONWEALTH one-piece cast steel Platform Center Sills provide the simplest, strongest, and best construction for high-speed, modern, light-weight passenger cars. They minimize damage to cars in collision; meet all safety standards—and achieve great strength without an increase in weight.

● For smoother, quieter, safer passenger-train service at the high speeds of today and tomorrow, specify these COMMONWEALTH Devices.

L CASTINGS EDDYSTONE, PA.
GRANITE CITY, ILL.

EXIDE-IRONCLAD POWER

for peak performance under all operating conditions

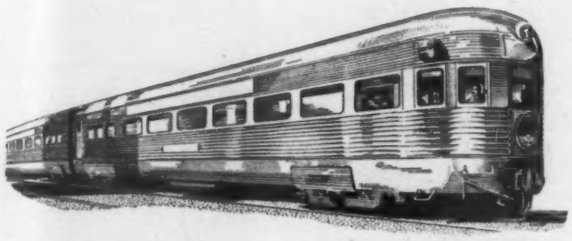


Every day, every night, on leading railways throughout the country, Exide-Ironclads are hard at work. In thousands of passenger cars they are keeping lights bright and air-conditioning units functioning smoothly . . . even during long stops. They are cranking Diesel-electric locomotives, powering train telephone systems, and ably performing other storage battery tasks.

And wherever they are employed, Exide-Ironclads are giving peak performance . . . with long-life, economy and ease of maintenance. Their excellent service of today will be duplicated in the trains of tomorrow . . . for Exide-Ironclads are designed and built to meet the railroad's modern storage battery needs.

Exide
IRONCLAD
BATTERIES

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32
Exide Batteries of Canada, Limited, Toronto



BUILT FOR THE LONG RUN

When a new train is run out on the tracks, it gets a lot of attention. The railroad expresses its pride. Civic leaders applaud. People come by the thousands to admire its gleaming splendor. Passengers sink into its luxuriously cushioned seats and say: "What a wonderful train."

But Budd is conscious that behind the scenes on every railroad is a skilled and willing crew who must take care of that train. They must clean it and oil it and keep its magical modern conveniences in working order. If it gets damaged, it may have to be repaired.

Therefore, Budd takes MAINTENANCE into account in designing and building the train. Both the maintenance that permits a swift "turn-around" and the maintenance that keeps the car on the rails instead of wasting time and money in the shop.

In the following two pages is shown one of the features that promote ease of maintenance in Budd stainless steel cars. Others will be shown in following issues of Railway Age. They add up to the reasons why Budd cars have made remarkable records for availability and continuous service and why those records will be bettered in the future.

THE BUDD COMPANY

Railway Division • Philadelphia

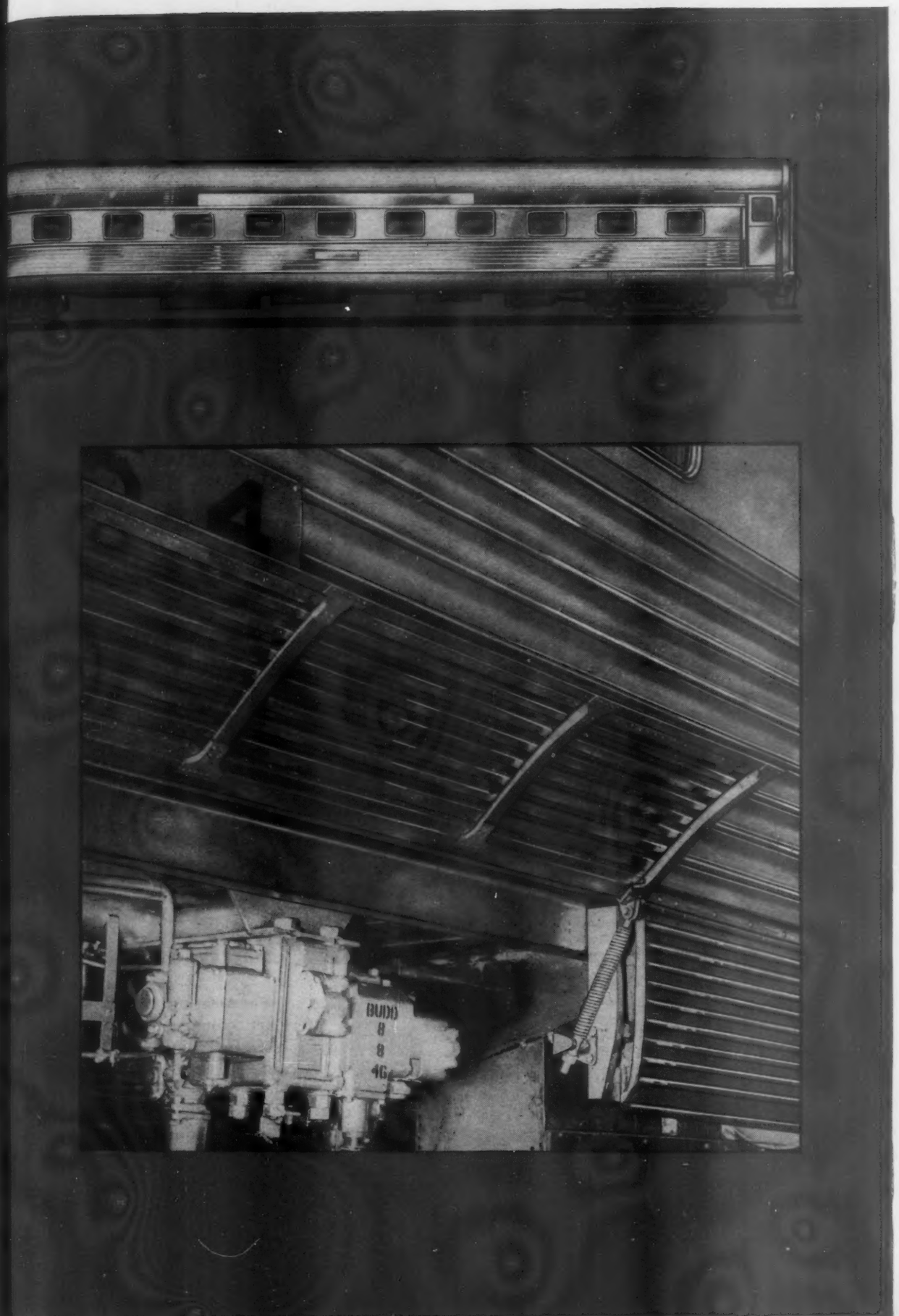
HINGED SKIRT

makes under-car maintenance more accessible on Budd cars

Much of that streamlined appearance of modern passenger cars is due to sleek curved skirts. On most cars they are bolted to the car structure, and being rigid, interfere with maintenance of under-car equipment. When damaged, repair and replacement is expensive and tedious.

Budd lightweight stainless steel skirts are bolted on in *hinged* sections. Each section is controlled by a special spring arrangement which holds the skirt in either up or down position without any locking means. This permits quick unobstructed access to the under-car. Replacement in case of damage is a matter of removing little more than the affected area.

Budd


(BUDD)
8
8
4G

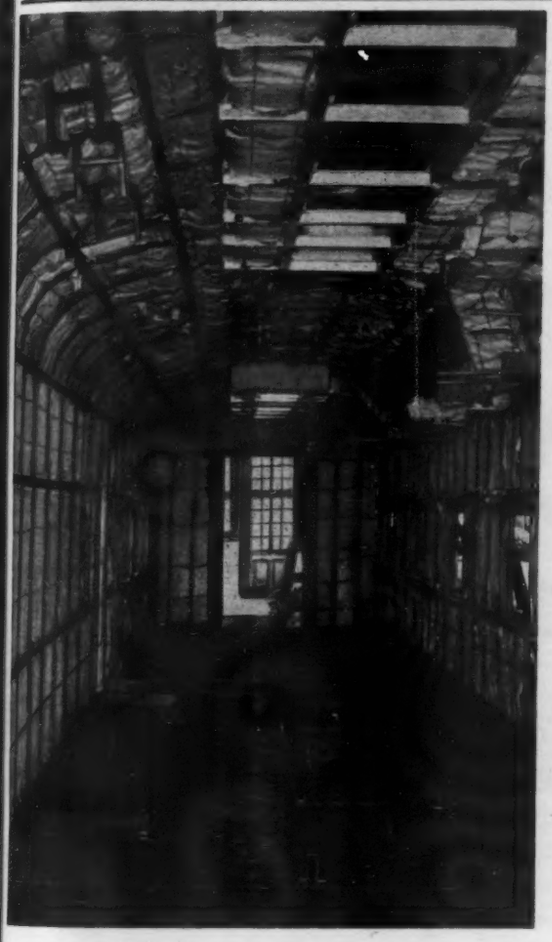
For trains that carry their

On order for the American traveler—are more speed, safety and comfort from the railroads. 2500 new passenger cars valued at one-quarter billion dollars will soon go into operation equipped with the most modern developments for improving railway travel. Many of these cars will be insulated with Johns-Manville Stonefelt, designed exclusively for passenger car service.

Johns-Manville Products

INSULATIONS (THERMAL AND ELECTRICAL) • PACKINGS • CAR FLOORING

own climate with them...



Johns-Manville STONEFELT

North or south . . . winter or summer—cars insulated with Stonefelt are easily maintained at even temperatures—always provide the comfort that passengers demand.

Stonefelt wraps cars in strong lightweight blankets that effectively resist heat transmission and muffle sound . . . is easily applied to the structure. Made of interwoven, specially treated mineral fibers, very small in diameter and felted, Stonefelt retains its rated thickness in service and won't settle even under severe vibration.

Fire- and moisture-resistant, Stonefelt is covered on both sides with a layer of reinforced asbestos paper, flame-proofed muslin or a combination of both, depending on the service requirements. Johns-Manville Engineers specializing in passenger car insulation problems will tell you which is best for your needs.

For complete information on Stonefelt and other J-M Products for the Railroads, write Johns-Manville at New York, Chicago, Cleveland, St. Louis or San Francisco.

Johns-Manville Stonefelt* offers:

HIGH ACOUSTICAL EFFICIENCY . . . LOW THERMAL CONDUCTIVITY . . . LIGHT WEIGHT . . . RESILIENCE FIRE-RESISTANCE . . . MOISTURE-RESISTANCE . . . EASY APPLICATION . . . STRENGTH . . . DURABILITY

*Reg. U. S. Pat. Off.

for the Railroads...

JOHNS-MANVILLE JM PRODUCTS

FRICTION MATERIALS • REFRACTORIES • BUILDING MATERIALS

L & N

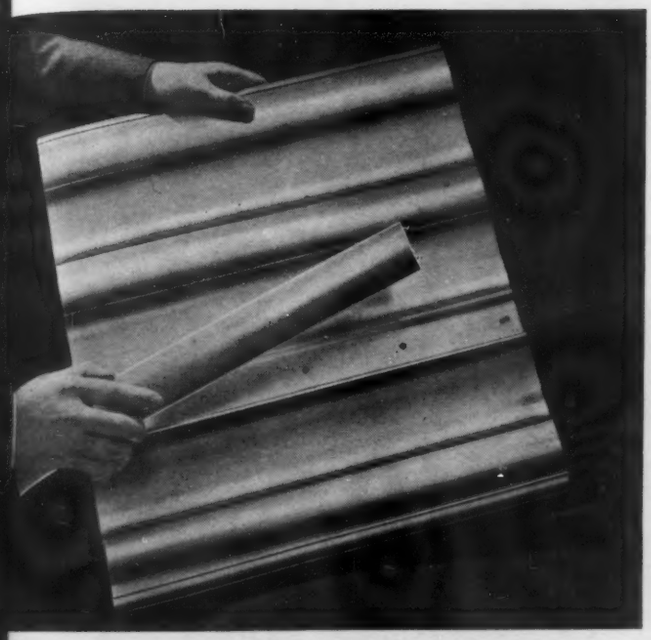
"BUILT PRINCIPALLY OF ALC

JEWEL-LIKE BEAUTY AND BRUTE STRENGTH are combined in the twenty-eight new cars for the L & N "Humming Bird" and "Georgian" streamlined coach trains, built by American Car & Foundry. Alcoa Aluminum Alloys provide both these qualities, with a weight saving of *34 percent* over cars of conventional heavy metal construction.

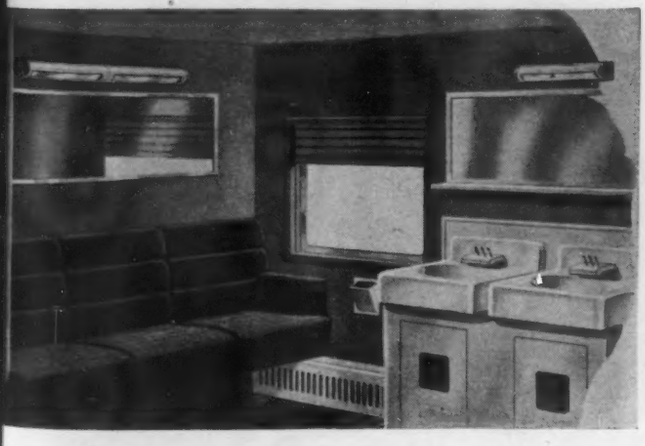
As these beautiful new trains swing through the Southland, their passengers will enjoy the protection of massive aluminum alloy sections in the body framing, as well as in center sills, side sil and floor beams. Along the L & N right-of-wa Southerners will thrill to the beauty of the roy blue and bright aluminum finish; the lasting sparl of these modern cars—a new milestone in t progress of American railroading! ALUMINU COMPANY OF AMERICA, 2178 Gulf Building, Pitt burgh 19, Pa. Sales offices in principal citi

Modern Railroading Calls for MAXIMUM Economie

OF ALCOA ALUMINUM"



COA ALUMINUM EXTRUSIONS in bright, lasting minum finish provide continuous horizontal panels above l below windows. Horizontal lines of rivets in side frame struction are concealed by bright-finish, snap-in moldings.



UMINUM is widely used in the spacious washrooms at the s of each car. Modern appointments of these washrooms will p their fine appearance, without painting or other attention.

EACH CAR is a complete unit, meeting all A.A.R. interchange requirements. Note detail of side panels, as well as modern steps of which aluminum constitutes an important part.

RECLINING, REVOLVING seats with Alcoa Aluminum frames and pedestals add to the beauty and light weight of the trains. Aluminum windows are designed for full vision, low maintenance cost.

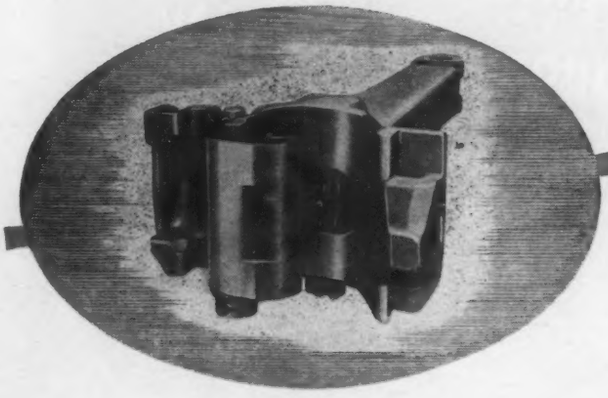
LIGHTING is recessed into ceiling, flanked on either side by aluminum air diffusers with a satiny finish. The interior color schemes of red, brown, and white are skillfully accented by the brightness of aluminum.

ALCOA FIRST IN ALUMINUM

ALCOA ALUMINUM

Arm chair comfort u

with Tightlock Couplers



The seasoned traveler knows real comfort and safety. He always prefers the trains that lead in rest, safety and relaxation—*smooth riding*. And, he tells others about it!

Besides the comfort feature, Tightlock Couplers provide extra protection to cars and passengers through their safety features and added strength.

That's why it's good business to equip passenger cars with Tightlock Couplers.

For Tightlock Couplers at their best — come to National Malleable and Steel Castings Company. We safeguard every feature through our careful manufacturing and rigid inspection, further assisting our customers in maintenance through our thoroughly trained field engineering service.

NATIONAL

MALLEABLE and STEEL CASTINGS CO.

Cleveland, Ohio

SALES OFFICES: Cleveland, Chicago, New York, Philadelphia, Richmond, San Francisco, St. Louis

WORKS: Cleveland, Chicago, Indianapolis, Melrose Park, Ill., Sharon, Pa.

The PENNSYLVANIA MODERNIZES WITH HAMILTON DIESELS for Economy and Safety

Hamilton 400 H.P. 900 R.P.M.—4 cycle Diesel Engine

Adapted to original rail car generator with fabricated steel sub-base

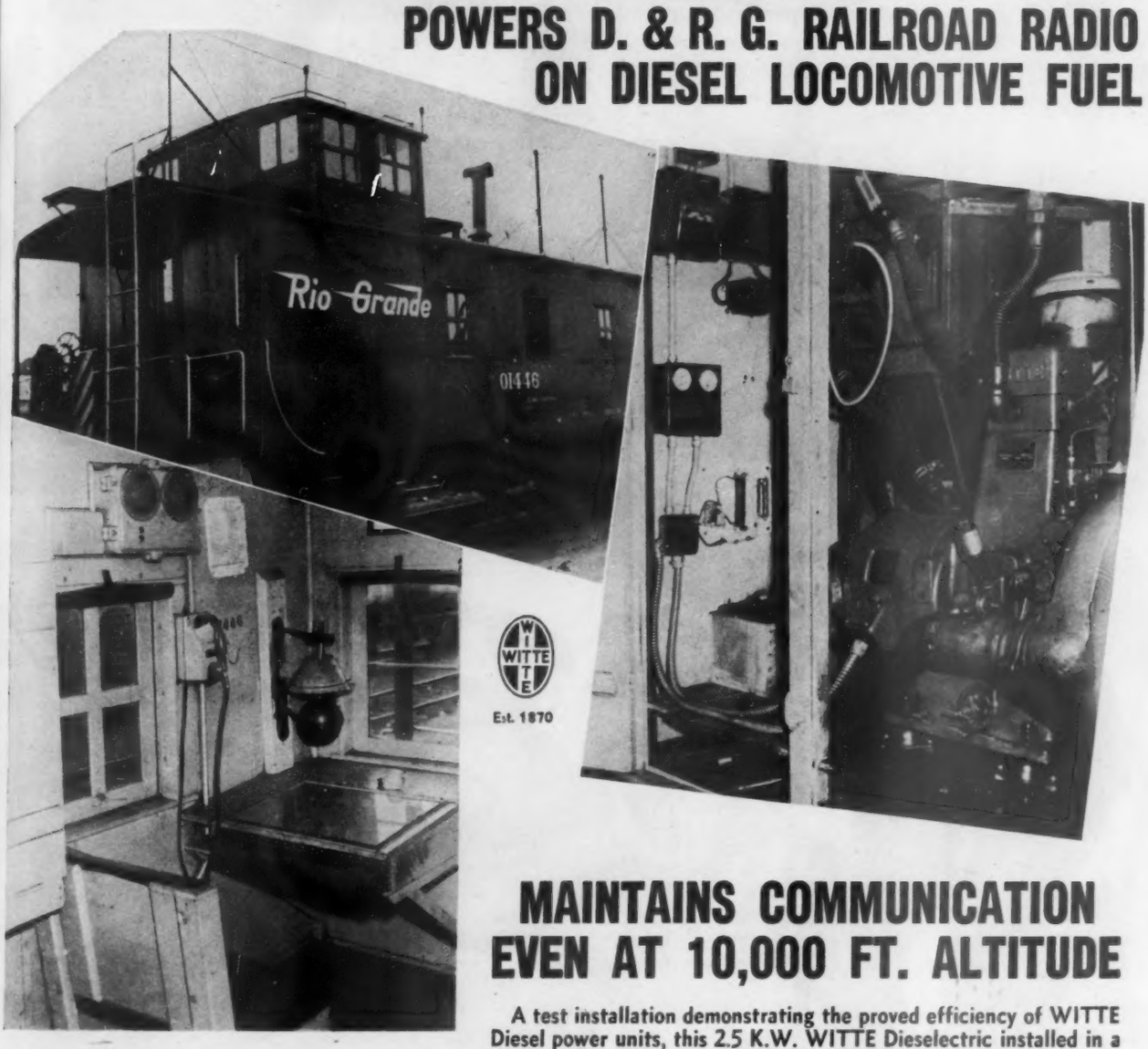
1. No change in sub-base mounting dimension!
2. Use present starting and generating equipment!
3. Reduce fuel cost!
4. Eliminate fire hazard!

Present your conversion problems to HAMILTON

GENERAL MACHINERY CORPORATION
HAMILTON, OHIO

THE NILES TOOL WORKS CO. ★ THE HOOVEN, OWENS, RENTSCHLER CO.

WITTE DIESELECTRIC PLANT
POWERS D. & R. G. RAILROAD RADIO ON DIESEL LOCOMOTIVE FUEL



Est. 1870

NOTE: WITTE unit as installed in caboose is enclosed in sound-proof cabinet and mounted on rubber vibration dampeners which isolate engine vibrations from the car. Vibration dampeners are steel reinforced. Electric lighting of caboose is also provided by the WITTE Dieselectric unit in this Denver & Rio Grande test installation.

MAINTAINS COMMUNICATION EVEN AT 10,000 FT. ALTITUDE

A test installation demonstrating the proved efficiency of WITTE Diesel power units, this 2.5 K.W. WITTE Dieselectric installed in a D. & R. G. caboose provides unfailing 110 volt, 60 cycle alternating current for end to end, train-to-station and station-to-station radio communication. No railroad radio communication system can be more efficient than its power—a fact as generally conceded as is the importance of railroad radio to profitable progress for railroads.

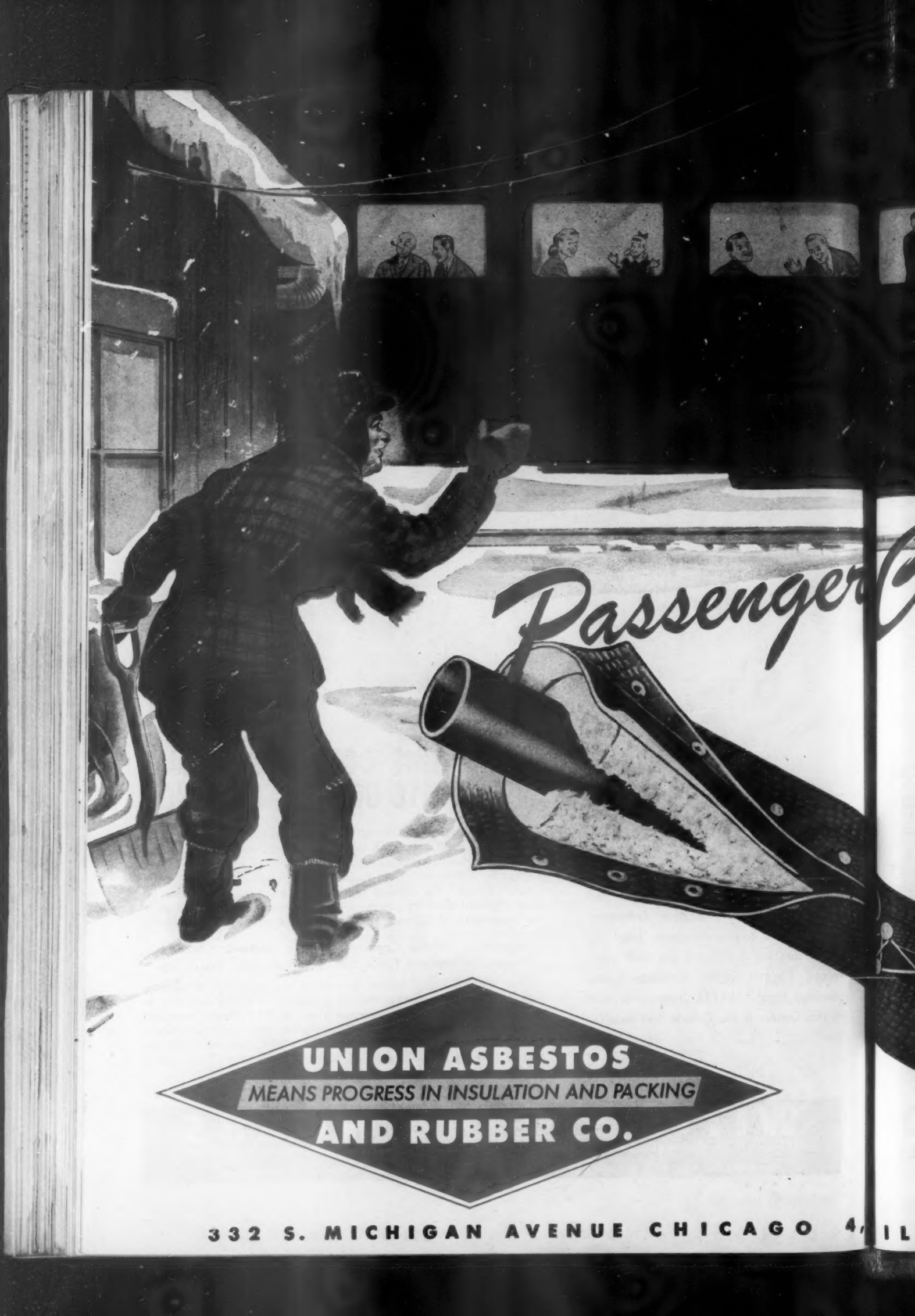
Ingenious Water-Cooling System Assures Steady Power Whether Train is Stopped, or Traveling

This WITTE Diesel feature is vital to the operation of railroad radio at all times—whether the car is moving in either direction or standing, in severe cold, or extreme heat. WITTE Diesels start and operate on the same fuel as the Diesel locomotive. Railroad officers are invited to obtain complete descriptive literature from our exclusive railroad distributors, T-Z Railway Equipment Co., 8 South Michigan Avenue, Chicago 3, Illinois.

WITTE ENGINE WORKS

DIVISION OF OIL WELL SUPPLY COMPANY — UNITED STATES STEEL CORPORATION SUBSIDIARY

LARGEST BUILDER OF SMALL DIESELS — KANSAS CITY 3, MO., U.S.A. CABLE WITTEKCMO


Passenger
UNION ASBESTOS
MEANS PROGRESS IN INSULATION AND PACKING
AND RUBBER CO.
332 S. MICHIGAN AVENUE CHICAGO 4,

...er Comfort

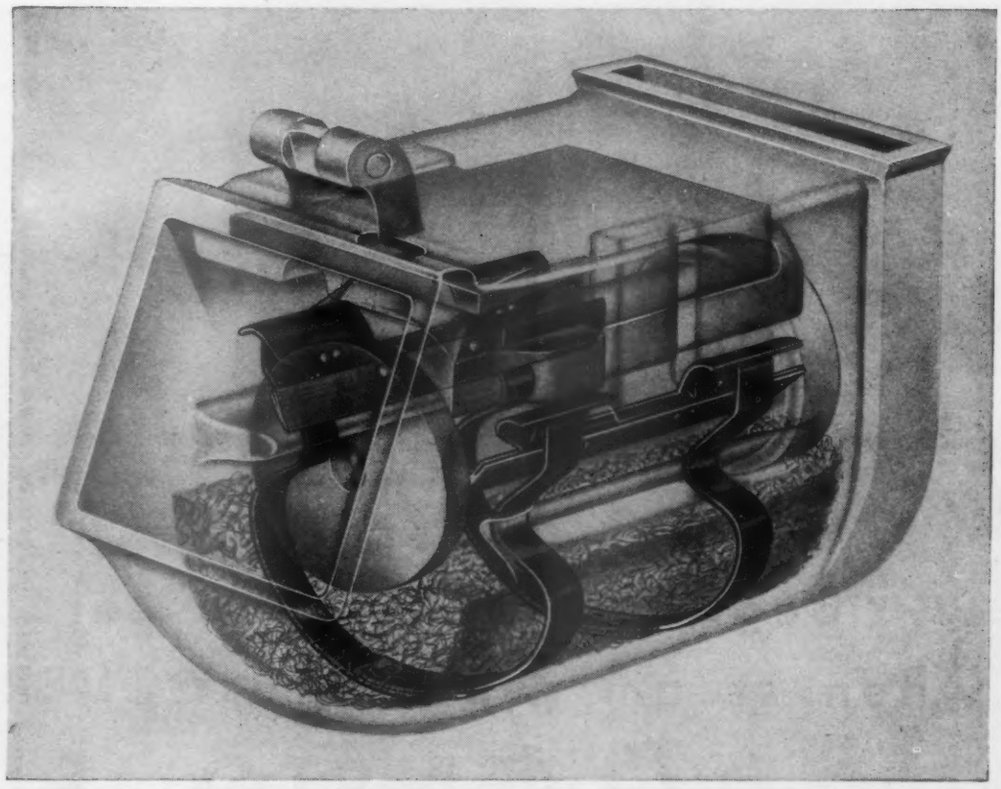
begins OUTSIDE the car when steam pipes are COVERED by WOVENSTONE!

Comfort is the keystone upon which revenues are going to be sustained—and built. To assure maximum comfort, you must be *sure* that insulation holds heat in—delivers steam to the car heating system at maximum temperatures. Wovenstone has been providing that kind of efficient, economical service—on much rolling stock for periods up to 12 years of continuous day-in, day-out operation... and it can be removed for pipe inspection and reapplied in a jiffy without loss of original efficiency. Yes, Wovenstone is really the *proven* insulation!

4, ILLINOIS • NEW YORK • SAN FRANCISCO

HOT BOXES

Due to Waste Grabs Can Be Prevented



There Are Four Outstanding Advantages in the Use of **ROBOT** Journal Box Packing Retainers in Your Passenger Car Equipment

SAFETY,

the first consideration for passenger trains is increased by the ROBOT Retainer, and the hazard to life and property caused by waste grabs are prevented by its positive action.

SAVINGS,

many times over the initial cost of the ROBOT Retainer can be made in both material and labor cost by preventing wheel and axle replacement caused by cut journals.

SATISFACTION

to your customers, the traveling public, will result from the elimination of train delays caused by hot boxes occurring on the line.

SERVICING

of the journal boxes at terminals and on the line is accomplished quicker and easier since packing is kept in adjustment at all times.

ROBOT Retainers are now being used on passenger cars operating in all sections of the country. Available in any journal size and to fit all types of journal boxes.

CHICAGO FREIGHT CAR & PARTS CO.

228 N. LA SALLE ST. **CHICAGO 1, ILL.**

SHOP AND YARDS: CHICAGO, ILL. — PUEBLO, COLO.

Reduce Maintenance Costs of Crossings

...with Austenitic Manganese-NICKEL Steel

At this location in Cornwall, Ontario, extremely heavy rail traffic required unusually frequent replacement of trackwork.

Until 1937...

In that year the Canadian Pacific Railway installed crossings cast by Canadian Car & Foundry Company, Ltd., of a modified "Hadfield" manganese steel . . . a material containing the usual manganese content but having, *in addition,* 3 to 5 percent of Nickel.

This addition of Nickel results in a distinct improvement over standard Hadfield steel, permitting easy build-up by periodic welding in place and retaining essential wear-resistance and work-hardening qualities.

The fact that austenitic manganese-Nickel steel is now serving at several more C.P.R. crossings, and is also being used on other railroads, emphasizes the proven efficiency and economy of this material.

We invite inquiries regarding labor-saving Nickel alloys for railroad operations as well as maintenance applications.

EMBLEM OF SERVICE

INCO TRADE MARK Nickel

Over the years, International Nickel has accumulated a fund of useful information on the selection, fabrication, treatment and performance of alloys containing Nickel. This information and data are yours for the asking. Write for "List A" of available publications.

THE INTERNATIONAL NICKEL COMPANY, INC. 67 WALL STREET NEW YORK 5, N.Y.

Urgent Demand for Veteran Housing Means Allocation of Douglas Fir Plywood

TODAY, a substantial proportion of Douglas fir plywood production is allocated by order of the Civilian Production Administration to the Reconversion Housing Program. Housing contractors, stock cabinet manufacturers, prefabricators and distributors **must** be supplied first — and this means a temporary shortage for all other industrial and construction users. But MORE plywood is being produced today than in pre-war years. When the present demand is met, an increased supply will be readily available. So — anticipate your needs as far in advance as possible. Keep in touch with your regular source of supply!

DOUGLAS FIR PLYWOOD ASSOCIATION
Tacoma 2, Washington

DOUGLAS FIR PLYWOOD
LARGE. LIGHT. STRONG.
Real Wood
PANELS

These "Grade Trade-Marks" Are Your Assurance of Uniform Quality Standards

There is a type and grade of Douglas fir plywood for every building need. Each MUST meet rigid performance tests — in the field and in the Douglas Fir Plywood Association Laboratory. Choose the type you need by these "Grade Trade-Marks" — stamped on every panel.

EXT.-D.F.P.A.

EXTERIOR-TYPE plywood is made with completely waterproof synthetic resin binder especially for permanent exposure to weather and water. It is widely used for building exteriors, for outdoor signs, for railroad car siding, and in all phases of marine construction.

GENUINE
-PLYSCORD-
SHEATHING
D. F. P. A.
INSPECTED

PLYSCORD is an unsanded utility panel of unusual rigidity, made to withstand the rigorous service demanded of wall and roof sheathing and of sub-flooring.

GENUINE
PLYWALL
Douglas Fir Plywood
WALLBOARD
D. F. P. A.
INSPECTED

PLYWALL is the grade of interior-type plywood made for use where only one side is exposed, as in wall paneling. It is suitable for most stained finishes, for painting or papering.

GENUINE
DOUGLAS FIR
PLYFORM
Concrete Form Panel
D. F. P. A.
INSPECTED

PLYFORM is the special concrete-form grade of Douglas fir plywood — a quality grade manufactured with highly water-resistant glues and intended for multiple re-use in form construction.

PLYPANEL D.F.P.A.

PLYPANEL is the grade of interior-type plywood made especially for high quality interior work on walls, ceilings, for booth partitions, cabinet doors and similar uses.

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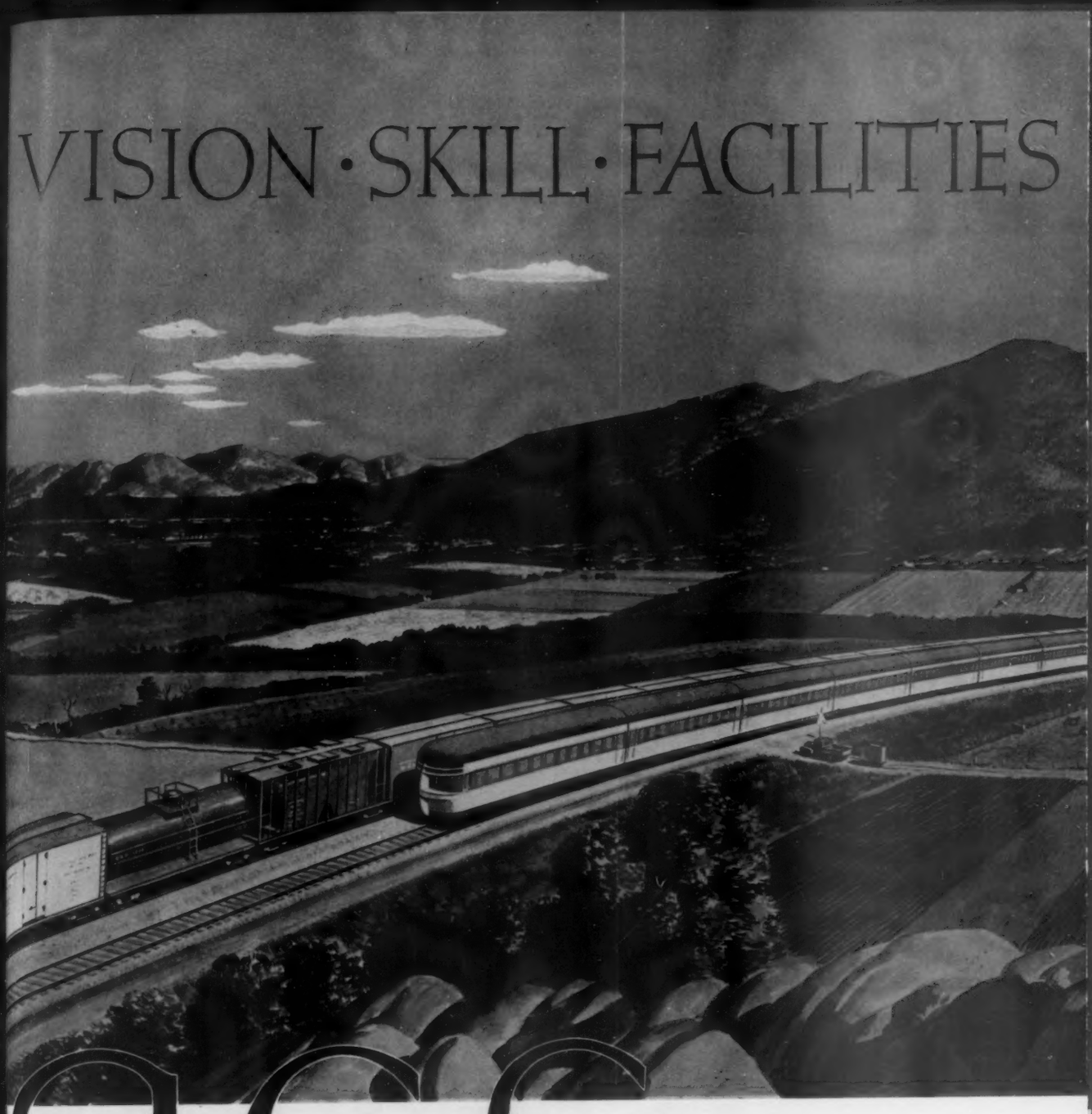
VISION · SKILL · FACILITIES



a.c.f. CAR BUILDERS

TO AMERICA'S RAILROADS

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LARGE

ALL TYPES OF CARS

Coaches... diners... sleepers... tavern cars... parlor cars... observation . . . baggage . . . and high-capacity coaches for commuter and subway service... all are being built today.

Forward-looking as tomorrow and unhampered by the past in their conception, A.C.F. offers the railroads a variety of exterior treatment . . .

- *in graceful fluted panels of gleaming metal*
- *in flashing paint of railroad selection*
- *in glittering smooth metallic finish*
- *or attractive combinations of fluted metal and paint or shiny metal and paint*

Our hand is skilled in all metals for we are bound to none . . . making full use of the customers' preference among structural materials...(1) low alloy high tensile steel, (2) aluminum, (3) carbon steel or chrome nickel steel.

Urgent Demand for Veteran Housing Means Allocation of Douglas Fir Plywood

TODAY, a substantial proportion of Douglas fir plywood production is allocated by order of the Civilian Production Administration to the Reconversion Housing Program. Housing contractors, stock cabinet manufacturers, prefabricators and distributors **must** be supplied first — and this means a temporary shortage for all other industrial and construction users. But MORE plywood is being produced today than in pre-war years. When the present demand is met, an increased supply will be readily available. So — anticipate your needs as far in advance as possible. Keep in touch with your regular source of supply!

DOUGLAS FIR PLYWOOD ASSOCIATION
Tacoma 2, Washington

DOUGLAS FIR PLYWOOD
LARGE. LIGHT. STRONG.
Real Wood
PANELS

These "Grade Trade-Marks" Are Your Assurance of Uniform Quality Standards

There is a type and grade of Douglas fir plywood for every building need. Each MUST meet rigid performance tests — in the field and in the Douglas Fir Plywood Association Laboratory. Choose the type you need by these "Grade Trade-Marks" — stamped on every panel.

EXT.-D.F.P.A.

EXTERIOR-TYPE plywood is made with completely waterproof synthetic resin binder especially for permanent exposure to weather and water. It is widely used for building exteriors, for outdoor signs, for railroad car siding, and in all phases of marine construction.

GENUINE
-PLYSCORD-
SHEATHING
D. F. P. A.
INSPECTED

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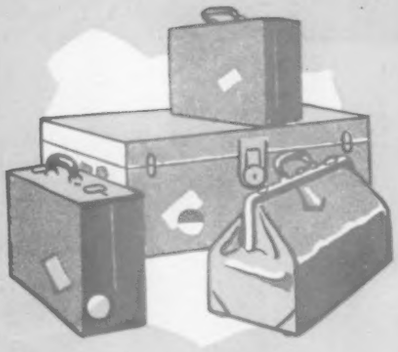
PLYPANEL D.F.P.A.

PLYPANEL is the grade of interior-type plywood made especially for high quality interior work on walls, ceilings, for booth partitions, cabinet doors and similar uses.

TRAFFIC WILL

FROM THESE



★ ALL THESE ARE FEATURES OF CARS

a c f

American Car and Foundry Co.

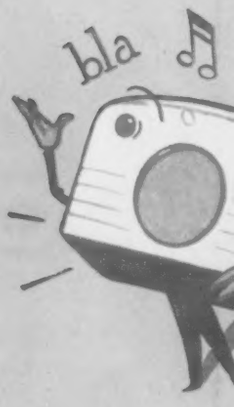
"Quality and Vision in Railroad Transportation"

New York
Chicago
St. Louis
Cleveland
Philadelphia
Washington
Pittsburgh
San Francisco

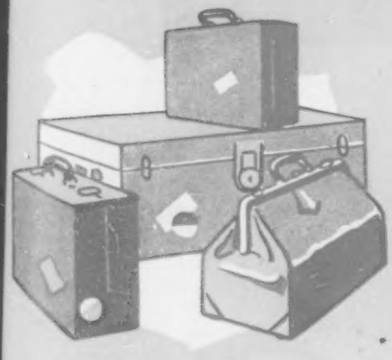
IC WILL GROW

FROM THESE DESIGN DEVELOPMENTS IN C.C.F. TRAINS

SOON ON THE RAILS



- ★ Smooth riding . . . quiet comfort . . . spacious atmosphere
- ★ Scientific non-glare lighting
- ★ Air conditioning that will build a train's reputation
- ★ Restful harmony of color . . . decoration in the best of modern taste
- ★ Radio installation for music and announcing
- ★ Nurseries and special facilities for children
- ★ Circulating ice water in roomettes and compartments
- ★ Roomier baggage accommodations involving no loss of revenue
- ★ Rounded corners and sanitary coves that make car cleaning quick and easy
- ★ Washrooms with space-saving fixtures that are readily kept clean and bright



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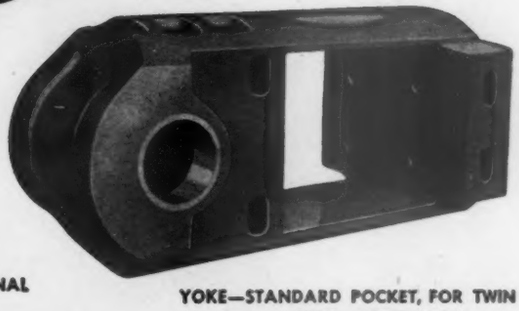
A.A.R. TYPE H TIGHTLOCK COUPLER AND ATTACHMENTS

YOKE—STANDARD POCKET, FOR CONVENTIONAL DRAFT GEAR APPLICATION



YOKE—STANDARD POCKET, FOR TWIN DRAFT GEAR APPLICATION

MOOTH, QUIET RIDING • INCREASED SAFETY • LONG LIFE

- Eliminate slack in coupler contour.
- End noise caused by coupler slack.
- Intercouple with existing standard couplers . . . greatly reducing contour slack which normally exists.
- Insure positive engagement when coupling at slow speeds.
- Increase safety against accidental uncoupling.
- Reduce fatigue failures.
- Increase service life.

THE SYMINGTON-GOULD CORPORATION

Works: ROCHESTER & DEPEW, NEW YORK

New York • Chicago • St. Louis • Boston • San Francisco • In Canada: ADANAC SUPPLIES, LTD., Montreal, Que.

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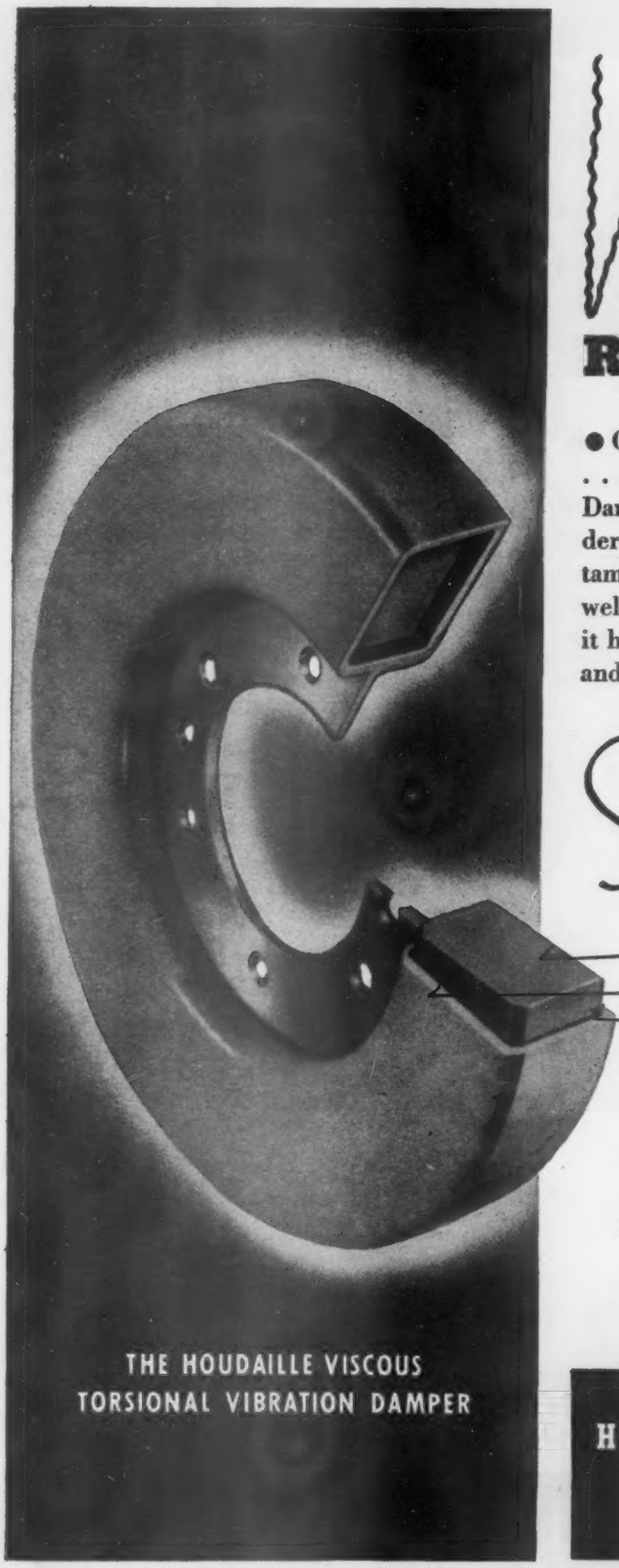


THE HOUDAILLE VISCOUS
TORSIONAL VIBRATION DAMPER

Vibration and RELATED TROUBLES

● On large engines or small . . . gasoline or diesel . . . the Houdaille* Viscous Torsional Vibration Damper curbs both major and minor critical orders of vibration simply and efficiently. And by taming vibration, it solves related troubles as well. In cases where such problems have existed, it has proven effective in reducing engine noise and increasing timing-gear life.

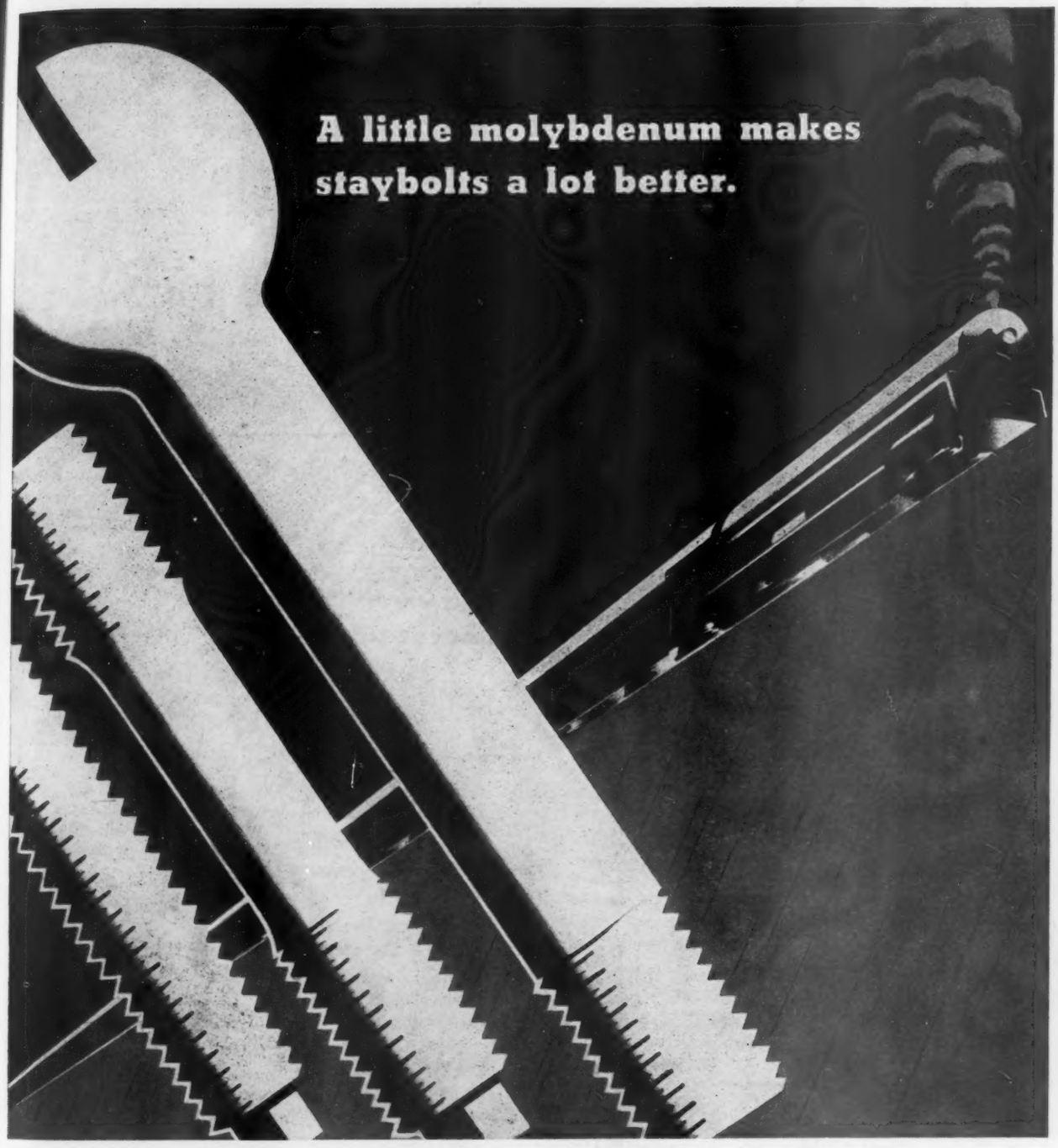
Simple as A·B·C

(A) Inertia mass or fly-wheel
(B) Two-piece welded housing
(C) Synthetic fluid

The Houdaille* Viscous Torsional Vibration Damper consists of only two essential parts...a two-piece welded housing and inertia mass or fly-wheel. Since it employs a synthetic fluid with relatively flat viscosity curve, its efficiency is not materially affected by temperature. The housing is hermetically sealed and there are no wearing parts . . . hence no service or replacement problem.

Houdaille engineers will be glad to discuss the application of the Viscous Torsional Vibration Damper to any internal combustion engine.*

HOUDE ENGINEERING DIVISION OF
HOUDAILLE-HERSHEY CORPORATION
MAKERS OF HYDRAULIC CONTROLS
BUFFALO 11, NEW YORK
*Pronounced—Hoo-dye



MOLYBDIC OXIDE—BRIQUETTED OR CANNED • FERROMOLYBDENUM • "CALCIUM MOLYBDATE"
CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS.

Climax Molybdenum Company
500 Fifth Avenue • New York City

MOLY

88% of the passenger-train cars ordered to date for postwar delivery *will be*

PASSENGER EQUIPMENT ALREADY ORDERED for post-war delivery to be built with U·S·S Stainless Steel and/or U·S·S COR-TEN

ATCHISON, TOPEKA & SANTA FE
43—U·S·S Stainless Steel—Budd
115—U·S·S Stainless and U·S·S Cor-Ten*
—Pullman-Standard
25—U·S·S Cor-Ten—Amer. Car & Fdy.

ATLANTIC COAST LINE
21—U·S·S Stainless Steel—Budd
60—U·S·S Stainless and U·S·S Cor-Ten*
—Pullman-Standard

BALTIMORE & OHIO
24—U·S·S Cor-Ten—Pullman-Standard

BOSTON & MAINE
12—U·S·S Stainless and U·S·S Cor-Ten*
—Pullman-Standard

CENTRAL OF GEORGIA
4—U·S·S Stainless Steel—Budd
10—U·S·S Cor-Ten—Amer. Car & Fdy.

CHESAPEAKE & OHIO
46—U·S·S Stainless Steel—Budd

CHICAGO & EASTERN ILLINOIS
11—U·S·S Cor-Ten—Pullman-Standard

CHICAGO, GREAT WESTERN
3—U·S·S Cor-Ten—Pullman-Standard

CHICAGO, BURLINGTON & QUINCY
44—U·S·S Stainless Steel—Budd

CHICAGO & NORTH WESTERN
78—U·S·S Cor-Ten—Pullman-Standard
20—U·S·S Cor-Ten—Amer. Car & Fdy.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC
28—U·S·S Cor-Ten—Pullman-Standard
186—U·S·S Cor-Ten—Company Shops

CHICAGO, ROCK ISLAND & PACIFIC
57—U·S·S Stainless and U·S·S Cor-Ten*
—Pullman-Standard

DELAWARE, LACKAWANNA & WESTERN
4—U·S·S Stainless Steel—Budd
24—U·S·S Cor-Ten—Amer. Car & Fdy.

DENVER & RIO GRANDE WESTERN
13—U·S·S Stainless Steel—Budd

ERIE
7—U·S·S Cor-Ten—Pullman-Standard

FLORIDA EAST COAST
20—U·S·S Stainless Steel—Budd
16—U·S·S Stainless and U·S·S Cor-Ten*
—Pullman-Standard
4—U·S·S Cor-Ten—Amer. Car & Fdy.

GREAT NORTHERN
61—U·S·S Cor-Ten—Pullman-Standard
15—U·S·S Cor-Ten—Amer. Car & Fdy.

GENERAL MOTORS
4—U·S·S Cor-Ten—Pullman-Standard

ILLINOIS-CENTRAL
35—U·S·S Cor-Ten—Pullman-Standard

MAINE CENTRAL
12—U·S·S Stainless and U·S·S Cor-Ten*
—Pullman-Standard

KANSAS CITY SOUTHERN
10—U·S·S Cor-Ten—Amer. Car & Fdy.

LACKAWANNA
24—U·S·S Cor-Ten—Amer. Car & Fdy.

MINNEAPOLIS & ST. LOUIS
6—U·S·S Stainless Steel—Budd

MISSOURI-KANSAS-TEXAS
14—U·S·S Stainless and U·S·S Cor-Ten*
—Pullman-Standard

MISSOURI PACIFIC
10—U·S·S Stainless Steel—Budd

NEW YORK CENTRAL
239—U·S·S Stainless Steel—Budd
353—U·S·S Stainless and U·S·S Cor-Ten*
—Pullman-Standard
128—U·S·S Cor-Ten—Amer. Car & Fdy.

NEW YORK, NEW HAVEN & HARTFORD
180—U·S·S Stainless and U·S·S Cor-Ten*
—Pullman-Standard

NORTHERN PACIFIC
78—U·S·S Cor-Ten—Pullman-Standard

NORFOLK & WESTERN
21—U·S·S Cor-Ten—Pullman-Standard

PENNSYLVANIA
98—U·S·S Stainless Steel—Budd
99—U·S·S Cor-Ten—Pullman-Standard
66—U·S·S Cor-Ten—Amer. Car & Fdy.
90—U·S·S Cor-Ten—Company Shops

PERE MARQUETTE
18—U·S·S Stainless and U·S·S Cor-Ten*
—Pullman-Standard

READING
8—U·S·S Cor-Ten—Amer. Car & Fdy.

RICHMOND, FREDERICKSBURG & POTOMAC
14—U·S·S Stainless Steel—Budd
15—U·S·S Stainless and U·S·S Cor-Ten*
—Pullman-Standard
7—U·S·S Cor-Ten—Amer. Car & Fdy.

SEABOARD AIRLINE
36—U·S·S Stainless Steel—Budd
13—U·S·S Stainless and U·S·S Cor-Ten*
—Pullman-Standard
3—U·S·S Cor-Ten—Amer. Car & Fdy.

ST. LOUIS — SAN FRANCISCO
38—U·S·S Stainless and U·S·S Cor-Ten*
—Pullman-Standard

SOUTHERN
41—U·S·S Stainless Steel—Budd
76—U·S·S Stainless and U·S·S Cor-Ten*
—Pullman-Standard
23—U·S·S Stainless and U·S·S Cor-Ten*
—Amer. Car & Fdy.

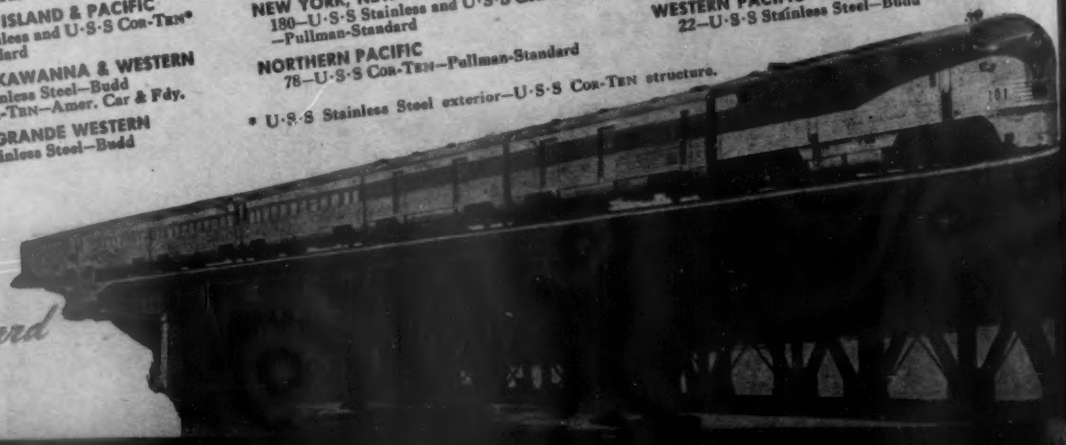
SOUTHERN PACIFIC
23—U·S·S Cor-Ten—Pullman-Standard

UNION PACIFIC
80—U·S·S Cor-Ten—Amer. Car & Fdy.

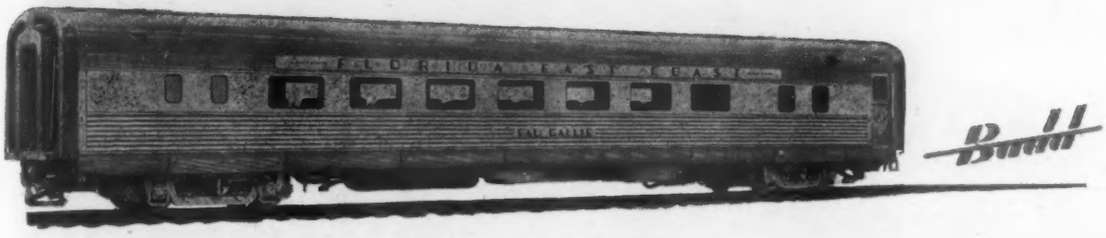
WABASH
15—U·S·S Cor-Ten—Amer. Car & Fdy.

WESTERN PACIFIC
22—U·S·S Stainless Steel—Budd

* U·S·S Stainless Steel exterior—U·S·S Cor-Ten structure.



Pullman-Standard



Built

be built with U·S·S Stainless Steel

or U·S·S COR-TEN ... or both

THE use of these fine structural steels in 2850 new post-war passenger cars—already in service, now building or on order—is based on their outstanding performance in lightweight passenger equipment built before the war.

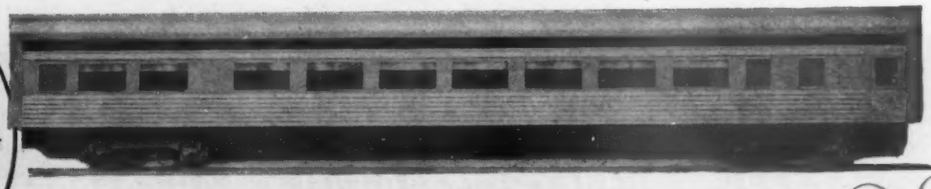
Up to the present, a grand total of 4770 passenger train units — sleepers, coaches, diners, baggage and mail cars, etc.—have been built or ordered built lighter, stronger and longer lasting with U·S·S Stainless Steel and U·S·S COR-TEN, used alone or together.

Using U·S·S Stainless Steel and U·S·S COR-TEN, leading car builders and railroads have developed equipment that ranks as the most modern, most efficient and most profitable of its kind in the world.

Our experience in producing these steels and in cooperating with owners, designers and builders in their application has given us a background of practical knowledge which we gladly place at your disposal.

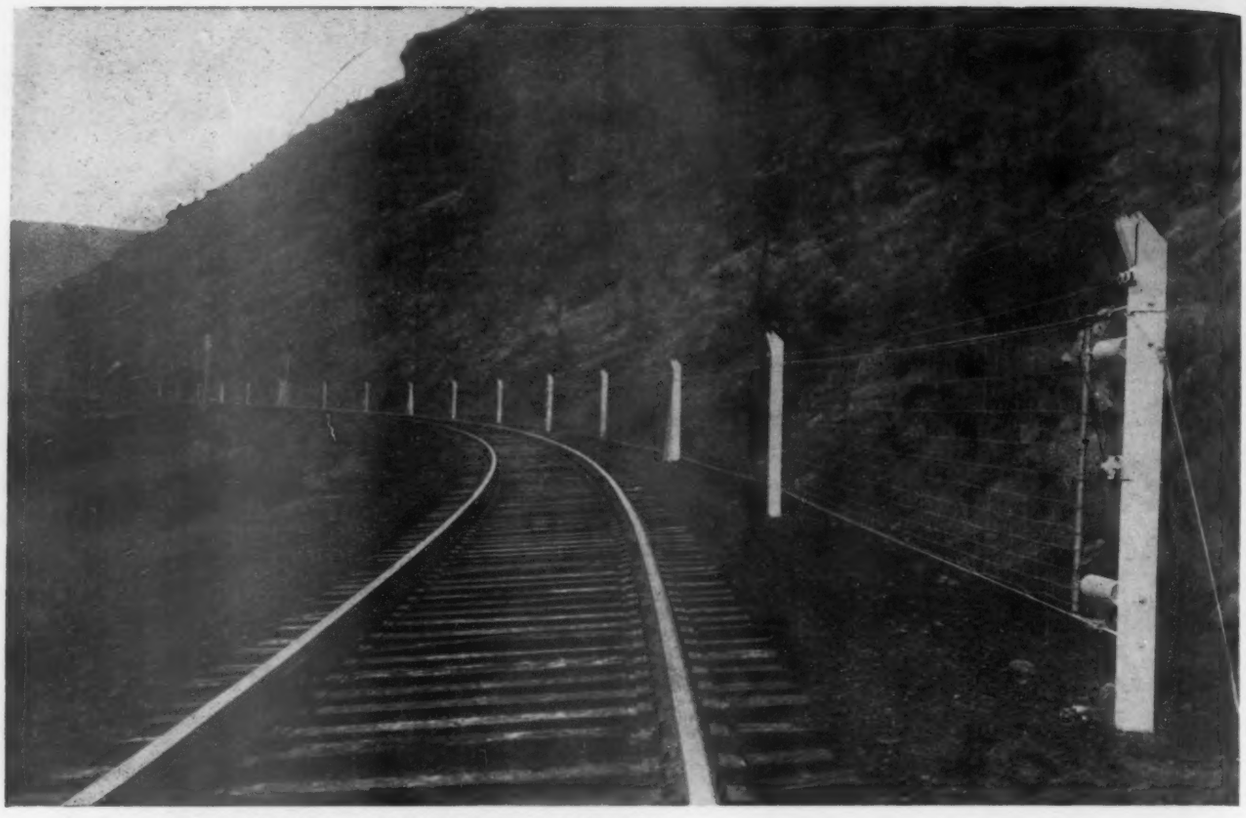
AMERICAN STEEL & WIRE COMPANY, *Cleveland, Chicago and New York*
CARNEGIE-ILLINOIS STEEL CORPORATION, *Pittsburgh and Chicago*
COLUMBIA STEEL COMPANY, *San Francisco*
TENNESSEE COAL, IRON & RAILROAD COMPANY, *Birmingham*
NATIONAL TUBE COMPANY, *Pittsburgh*
United States Steel Supply Company, Chicago, *Warehouse Distributors*
United States Steel Export Company, New York

USS STEEL
UNITED STATES STEEL



a.c.f.

UNITED STATES STEEL



PHOTO—COURTESY DENVER & RIO GRANDE WESTERN RAILROAD CO.

A Fence for Every Purpose

CF&I manufactures "a fence for every purpose." COLORADO FENCE serves the railroads in many ways; for rights of way, stock pens, yards, shops and slide detectors.

COLORADO ***woven wire*** FENCE 55 inches high is admirably adapted to slide detectors such as the one pictured above which is a typical installation in the Rocky Mountains. Specify Colorado Fence for all railroad uses.

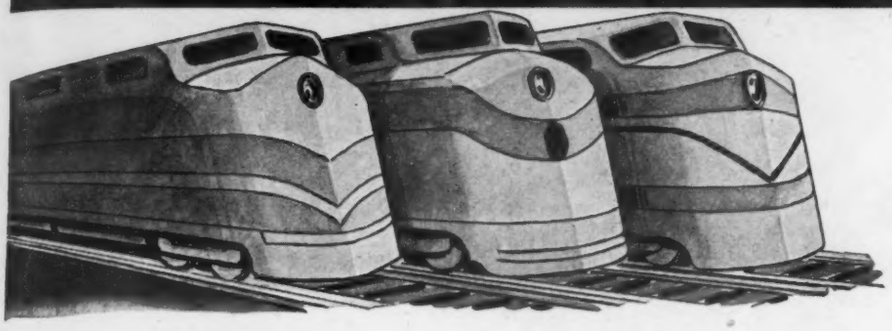
COLORADO RAIL

A PRODUCT OF THE COLORADO FUEL & IRON CORPORATION

CF&I

EXECUTIVE OFFICES: DENVER, COLO. • RAIL MILL: PUEBLO, COLO.

PROTECTING DIESEL LOCOMOTIVE ENGINES



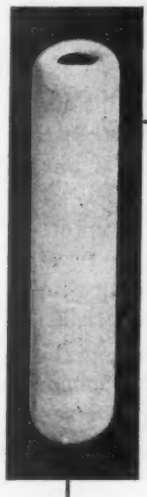
SINCE 1937

MICHIANA Filters Have 10 Years of Proven Performance Operating on Diesel Locomotives from Coast to Coast

Since 1937, MICHIANA Filters and Filter Elements have been used by the thousands for the protection of Diesel engines on locomotives. The performance and oil-saving features of MICHIANA Filters and Elements have been demonstrated during 10 years of extensive use.

Standard capacities include sizes up to 3266 H.P. and elements comprise two main types—Replaceable "Throw-Away" Cartridge, and the Repackable Type. The latter can be repacked with bulk Michiana "Wastex" or with the Pre-Packed "Wastex" Sock No. S.A. 17109L.

To insure life-long filtering efficiency and oil economy, be sure to use genuine MICHIANA Replacement Elements—in which genuine "Wastex" selected long-thread cotton waste is used as in original MICHIANA Filters. Such long-thread waste provides for greater surface, and does not pack down or clog screen holes like short, shredded material.



New Pre-Packed "Wastex" (S. A. 17109L) for Repackable Element Filters

Pre-Packed, ready-to-use "Wastex" Units are now available for MICHIANA Filters having Repackable Type Elements. Instead of repacking with bulk "Wastex" the new Unit simplifies servicing, saving time in removal and replacement of the filtering material.

Identified as No. S. A. 17109L, this Unit is slipped over the center tube of either the S. A. 17017 or S. A. 17117 Repackable Elements. Outside diameter is 6 in., inside 2½ in., overall height is 30⅛ in.

When using the Pre-Packed Sock S. A. 17109L, be sure that the screen-covered tube is not permanently removed. For safety and to guard against material getting into the central tube, the separate tube is essential in each element and should never be discarded.

Replacement of Elements makes Filter as good as new. Elements for Replaceable Element Type Filters (163 H.P. to the 3266 H.P. range) are identical, simplifying service problems.

MICHIANA PRODUCTS CORPORATION
Michigan City, Indiana

MICHIANA DIESEL ENGINE FILTERS

They differ about magazines

but they agree about Restfoam!

Naturally they agree about Restfoam! And *your* passengers will, too.

There's a reason why! You see, this new foam rubber cushioning makes seats and chairs extra comfortable . . . makes train travel extra enjoyable.

That's because Restfoam is "comfort-ized" by an exclusive Hewitt process. This results in the kind of riding comfort that helps keep passengers satisfied.

So plan now to give *your* passengers this "best bet in riding comfort." Remember, Restfoam provides ALL FIVE essential advantages:

Extra Comfortable . . . yields to every contour of *any* person's body, yet offers firm *natural* support.

Keeps Its Shape . . . always returns to its original shape; nothing to pack or mat down.

Cool . . . self-ventilated by millions of tiny interlaced air cells.

Sanitary . . . clean, washable, dustproof.

Long Lasting . . . far outlasts any ordinary cushioning material.

FREE! Send today for your copy of "Best Bet In Riding Comfort." It tells about Restfoam—and its advantages for you and your passengers. Write Hewitt Rubber of Buffalo, 240 Kensington Ave., Buffalo 5, N.Y.

HEWITT RESTFOAM

is made by **HEWITT RUBBER** *of Buffalo*

Division of Hewitt-Robins Incorporated

QUALITY RUBBER PRODUCTS FOR 86 YEARS

Temperature comfort is the most important single factor affecting your passengers. They cannot be satisfied without it. When temperature comfort is engineered by Vapor, your passengers are free to enjoy the luxuries of modern railroad travel. Almost all the new passenger cars have temperature comfort engineered by Vapor.
Have Your
TEMPERATURE COMFORT
Engineered by
Vapor
ECONOMY • SIMPLICITY • RELIABILITY
SALES AND SERVICE FROM OFFICES IN CHICAGO • NEW YORK • SAN FRANCISCO
PHILADELPHIA • ST. PAUL • ST. LOUIS • WASHINGTON • MONTREAL, QUEBEC

Problem:
Building Revenues.
Solution:
install Luminator Lighting
and permit passengers
to read and relax
while they ride!

A great many transportation executives have already taken advantage of Luminator's invitation to visit their laboratory—to observe first hand the importance of proper lighting and methods of accomplishing it. In the Luminator Laboratory they have seen lighting advancements that utilizes the latest developments in fluorescent and incandescent fixtures applied to the science of transportation lighting.

Add to your passengers' comfort and their desire to ride—and ride again, by installing Luminator Lighting.

LIGHTING ENGINEERS • DESIGNERS • MANUFACTURERS

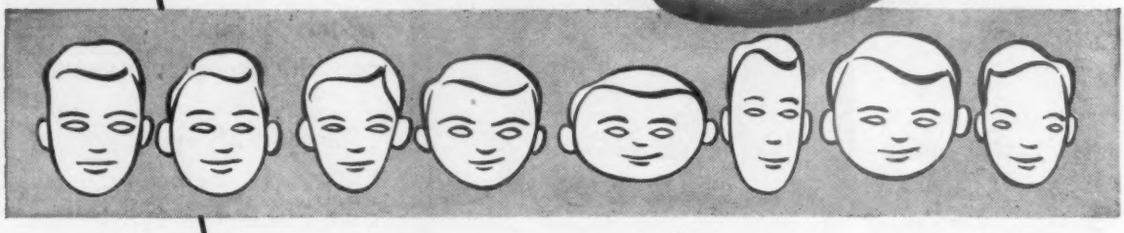
LUMINATOR INC.

120 NORTH PEORIA ST., CHICAGO, ILLINOIS
IN CANADA: RAILWAY AND POWER ENGINEERING CORP.

Whatever the face—
We have the fit with

WILLSON *Safety Spectacles*

TYPE AS

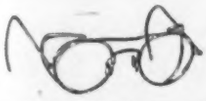


★ Accurate spectacle fit for every worker —whatever his face type may be— is assured by the 20 combinations of Willson lens and bridge sizes. Correct fit provides maximum eye safety because it keeps the safety spectacle worn by the worker— gives all-day protection because of all-day wearing comfort.

● Willson Super-Tough* lenses give maximum eye protection because of their high impact resistance. Each and every lens is tested for uniformity and strength. Examples: Polariscope test for uniformity of heat treatment; Federal drop-ball test for impact resistance.

● Choose from two styles. "A," without sideshields, "AS," with sideshields, (plastic, Sonite, leather, or wire screen). For glare protection, too, specify lenses in Willsonite green.

TYPE A (without side shields)



TYPE AS (with side shields)

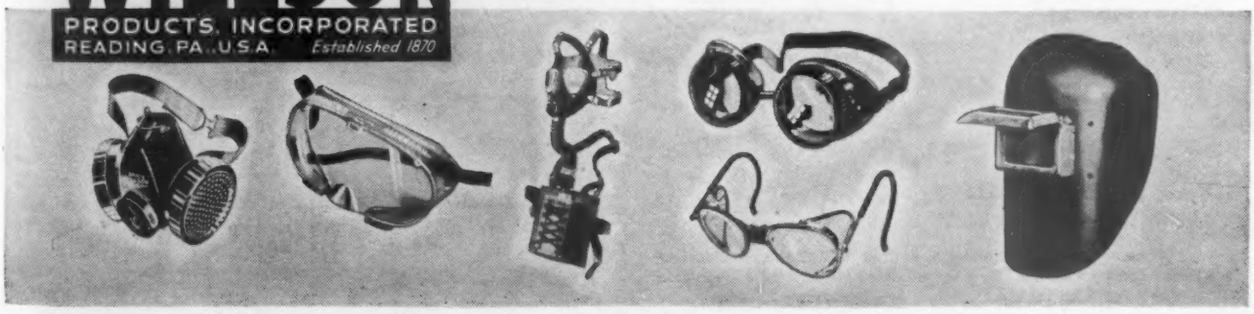
Let us make a survey of your particular safety needs—at no obligation on your part. For detailed information on the Willson Safety Service Program write to the Railroad Sales Dept., Willson Products, Inc. 241 Washington St., Reading, Pa.

GOGGLES • RESPIRATORS • GAS MASKS • HELMETS

DOUBLE WILLSON

PRODUCTS, INCORPORATED
READING, PA., U.S.A. *Established 1870*

*T. M. REG. U. S. PAT. OFF.



Setting New Records

Gould Kathanode Batteries have a service life 80% longer than flat plate batteries

Leak-proof seal instead of common bushing.

Duraper rubber separators replace wood type.

Double-wedge grids replace box type.

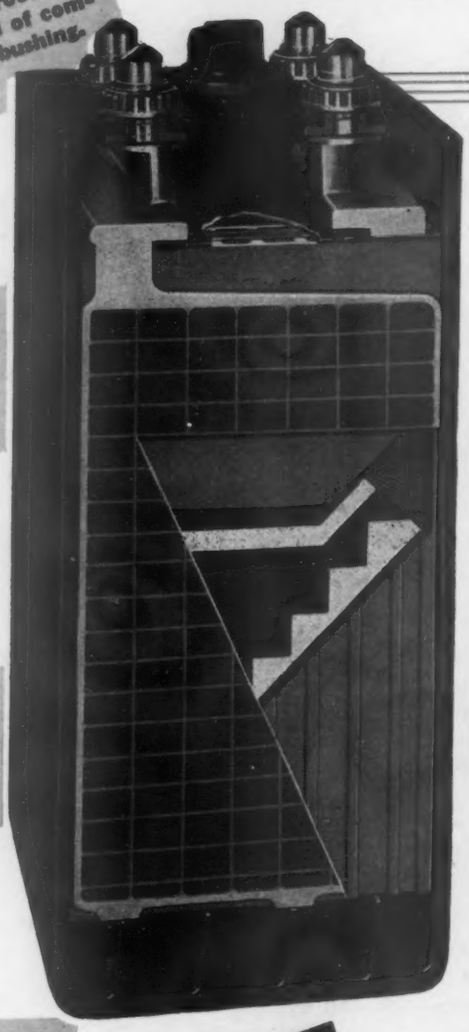
Black Oxide, a new type of active material compounded by Gould.

Unit-Seal perforated rubber envelope for extra plate protection.

Spun glass mats replace ordinary glass wool.

Monobloc containers of high impact strength.

Special negative active material compounded by Gould.



Gould introduced the Kathanode battery in 1925. Then, for the first time, American industry had a battery that would deliver 100% or more of rated capacity throughout its entire service life.

Since 1925 every part of the Gould Kathanode has been the subject of constant research and field tests. Many of the improvements developed are listed at the left. Together they mean that the Kathanode of today not only has greater capacity but maintains that capacity 80% longer than ordinary batteries.

Longer service life means more work done per dollar invested. Get the facts. Write Dept. 1511, Gould Storage Battery Corporation, Depew, N. Y., for the latest Kathanode catalog.

MEMO

Purchasing Dept. This is what we've been looking for. Order Gould.

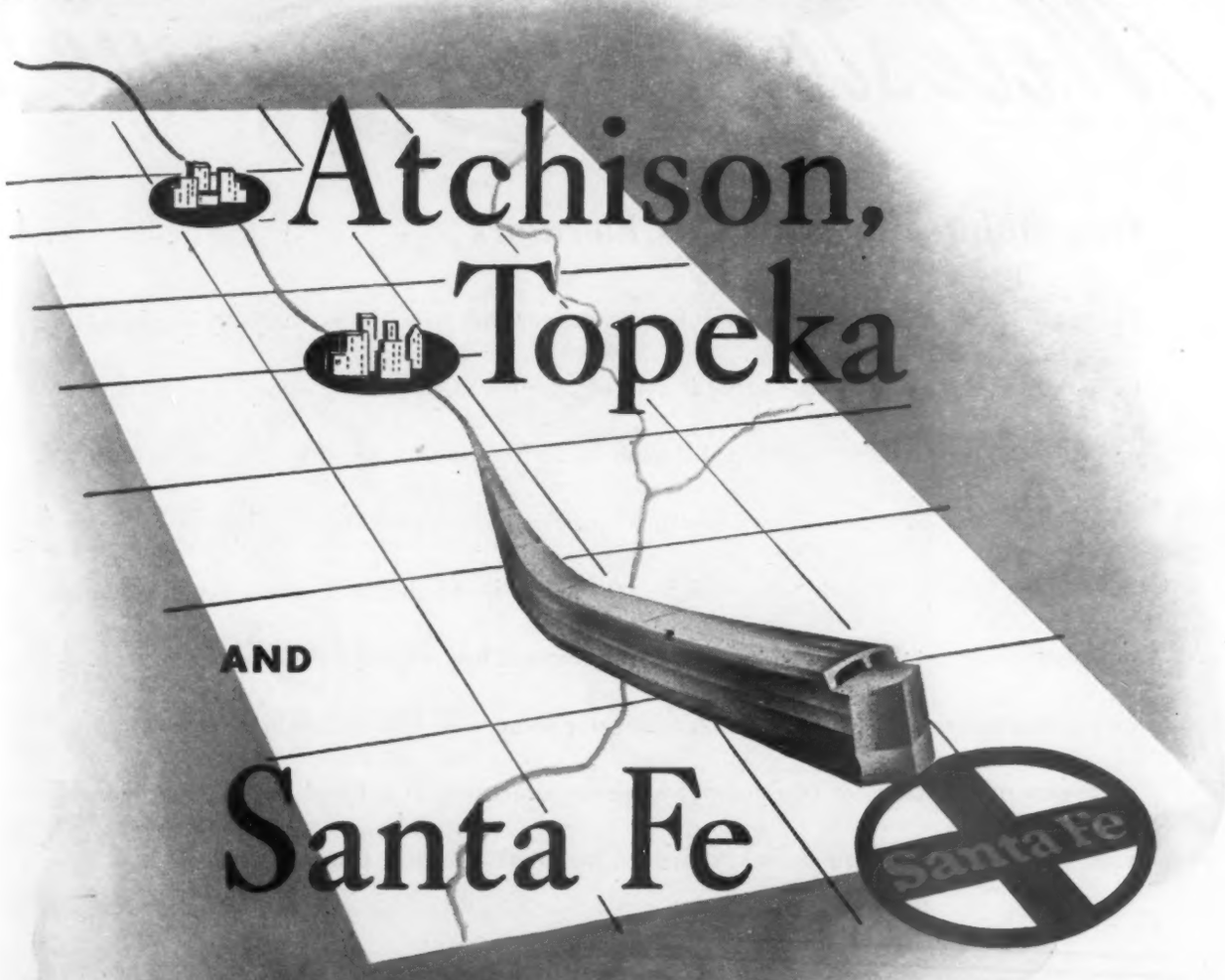
GENERAL MANAGER

GOULD KATHANODE BATTERIES

GOULD STORAGE BATTERY CORPORATION, Depew, N. Y.

Service Centers: Atlanta • Boston • Buffalo • Chicago • Cincinnati Cleveland • Detroit • Kansas City • Los Angeles • New York • Philadelphia Pittsburgh • St. Louis • St. Paul • San Francisco • Seattle

"AN INTERCHEMICAL FINISH"* RIDES ON THE . . .



Inside the shiny Budd-built stainless steel lounge and dining cars of the Atchison, Topeka & Santa Fe's crack streamliners, Chief and Super Chief, riders relax in an attractive, colorful, homelike atmosphere provided by comfortable seats and an interior whose brightness and cheerful coloring is enhanced and preserved by "An Interchemical Finish".

Interchemical's decorative and protective finishes, because of their qualities of permanence, light fastness, dependability, economy and ease of application, have long been used by both the Atchison, Topeka & Santa Fe and the Budd Co. for the initial finishing job and for refinishing rolling stock. Streamliners now being built for the Seaboard Air Line, and the Florida East Coast Railroad by the Budd Co. will also be decorated and protected by "An Interchemical Finish".

Interchemical's technicians are working constantly with leading railroads and traction companies in developing suitable, durable, attractive finishes for their vehicles. Interchemical is the only manufacturer who offers a line of more than 100 individual colors from which transportation companies can choose color schemes which can be matched at any future date as new vehicles are added to their fleets. Before you decide on the finishes for your new rolling stock be sure and call in an Interchemical transportation finish expert, so that you too can benefit from Interchemical's experience in the application of railroad finishes.

If you're interested in product finishes, you'll be interested in our new booklet "A Film is Born." Send for your copy today. Write Interchemical Corporation, Finishes Division, Dept. RA-11, Empire State Building, 350 Fifth Avenue, New York 1, New York.

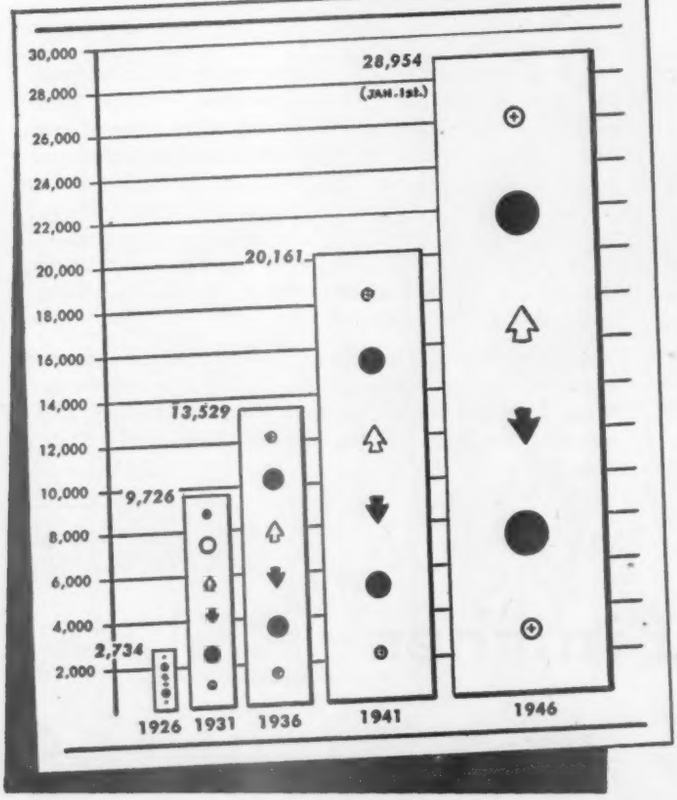
*Made by the Interchemical Corporation Finishes Division, a result of the recent consolidation of the business of Ault & Wiborg Division of Interchemical Corporation and that of the Murphy Varnish Company.

Interchemical Finishes

Milestones in Service

Otis Maintenance for Otis Elevators

There are 245 Otis offices* but only one Otis Maintenance Service. • This service is a home town enterprise in operation, so that it may be adapted to the area it serves. It is a national enterprise in research, engineering and manufacturing so that each Otis elevator owner may have the best that concentration and quantity production can provide. • Perhaps the strongest indication of the merit of this service is its growth and development. For more than a quarter of a century, in good times and bad, Otis Maintenance has proved the wisdom of one policy, one system and national service for Otis Elevator owners. • Otis Maintenance provides complete care of Otis elevator equipment by the manufacturer. It is furnished at a flat monthly rate. Complete details are available through local Otis Elevator Company offices.



←**Number of Elevators under Otis Maintenance. The steady increase in the number of elevators maintained for owners by Otis offers convincing proof of the economy and efficiency of *maintenance by the manufacturer.***

**Otis offices in 245 cities have but one interest . . . to provide the best and safest elevator and escalator transportation possible.*

1,400 ft. long station platform of Illinois Central at Champaign, Ill., was constructed in two strips with dowel joint between. Concrete was finished with wood float to insure safe walking surface.

Concrete station platform of Alton Railroad at Springfield, Ill., built by modern paving methods and designed to withstand grinding action of steel-wheeled baggage trucks.

Railroads apply CONCRETE paving methods for low maintenance Station Platforms

MODERN highway paving practices, including the use in Northern States, of air-entraining portland cement concrete, are being applied to increase the life span and reduce the maintenance cost of railroad station platforms.

State highway department specifications for concrete paving practice relating to proportioning of concrete and methods of placing, finishing and curing, have been followed in some recent platform construction.

Air-entraining portland cement was used to produce concrete highly resistant to freezing and thawing and the action of salts used to remove snow and ice.

Latest data on construction of concrete station platforms designed to withstand hard service at *low annual cost* will be gladly furnished on request. Free in United States and Canada.

PORTLAND CEMENT ASSOCIATION

Dept. 11c-26, 33 W. Grand Ave., Chicago 10, Ill.

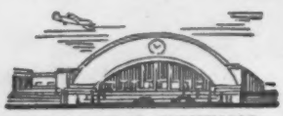
A national organization to improve and extend the uses of concrete . . . through scientific research and engineering field work

AN 18 YEAR RECORD OF TOUGH SERVICE!

HOTELS

A GOOD deal of recent discussion seems to indicate that the plastics age is in the future, and of course it is, in the sense that plastics will be much more widely used than they ever have been.

But you should not overlook the fact that at least one plastic material, laminated plastic Formica has been serving since 1927 in some of the hardest architectural surfacing applications, meeting the most brutal wear and abuse and maintaining over the years its original beauty and sparkle.



AIR, BUS, RAIL TERMINALS

In hotels for instance, it has served for years as tops for bedroom furniture defying cigarettes and alcohol; it has been used also in hotels for table tops in restaurants, coffee shops, bars, for elevator interiors, column covering, and wall paneling.

In train, bus, and rail terminals you will find it on main entrance doors—and there are none that get more severe use.

HOSPITALS

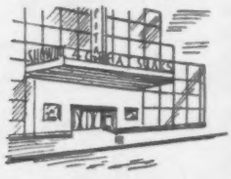
It is also applied there to ticket counters, telegraph desks, telephone booths, soda fountains.

In hospitals its stain proof beauty enables it to perform for years without deterioration on bedside and overbed table tops, private room furniture, shelving in the pharmacy—all spots where no ordinary material could stand up.

Restaurants use it for counter tops and panels, cashiers' desks, table tops, window backgrounds, booth partitions and many other uses.

RESTAURANTS

Main entrance doors of theaters, lobby paneling, ticket booths, water fountain back panels, partitions and wall covering in toilet rooms have been equipped with it.

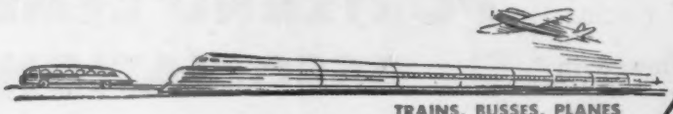


THEATERS

In busses, trains, and planes it is used for window stools, seat backs and ends, table tops, shelving and similar purposes.

In short, wherever exceptional appearance must be combined with unusual resistance to wear there you will find Formica in solid colors, patterns, inlays, and "Realwoods" in which the genuine veneer of rare woods is introduced into the plastic sheet.

For periods up to 18 years Formica has made good in these uses. It is no Johnny-come-lately—but a thoroughly tried, thoroughly tested and well established material. You take no chances when you specify Formica.



TRAINS, BUSSES, PLANES

TOUGH JOBS FORMICA HAS DONE

Entrance Doors Penn Station New York

Table Tops on the Twentieth Century and Broadway Limited Trains.

Furniture, Table Tops, Bars, Bathroom Walls on Queen Mary and Queen Elizabeth.

Wall Paneling of the President's own room at the National Airport, Washington, D. C.

Furniture, Counter tops, Bars, Cocktail room table tops, Washington Statler.

Book Shelves, Desk Panels and Tops, Reading Tables and Tops, Annex to Congressional Library.

Bar Panels and Tops at Lindy's New York Restaurant.

Lobby Paneling and Entrance Doors in scores of Warner Brothers Theaters.

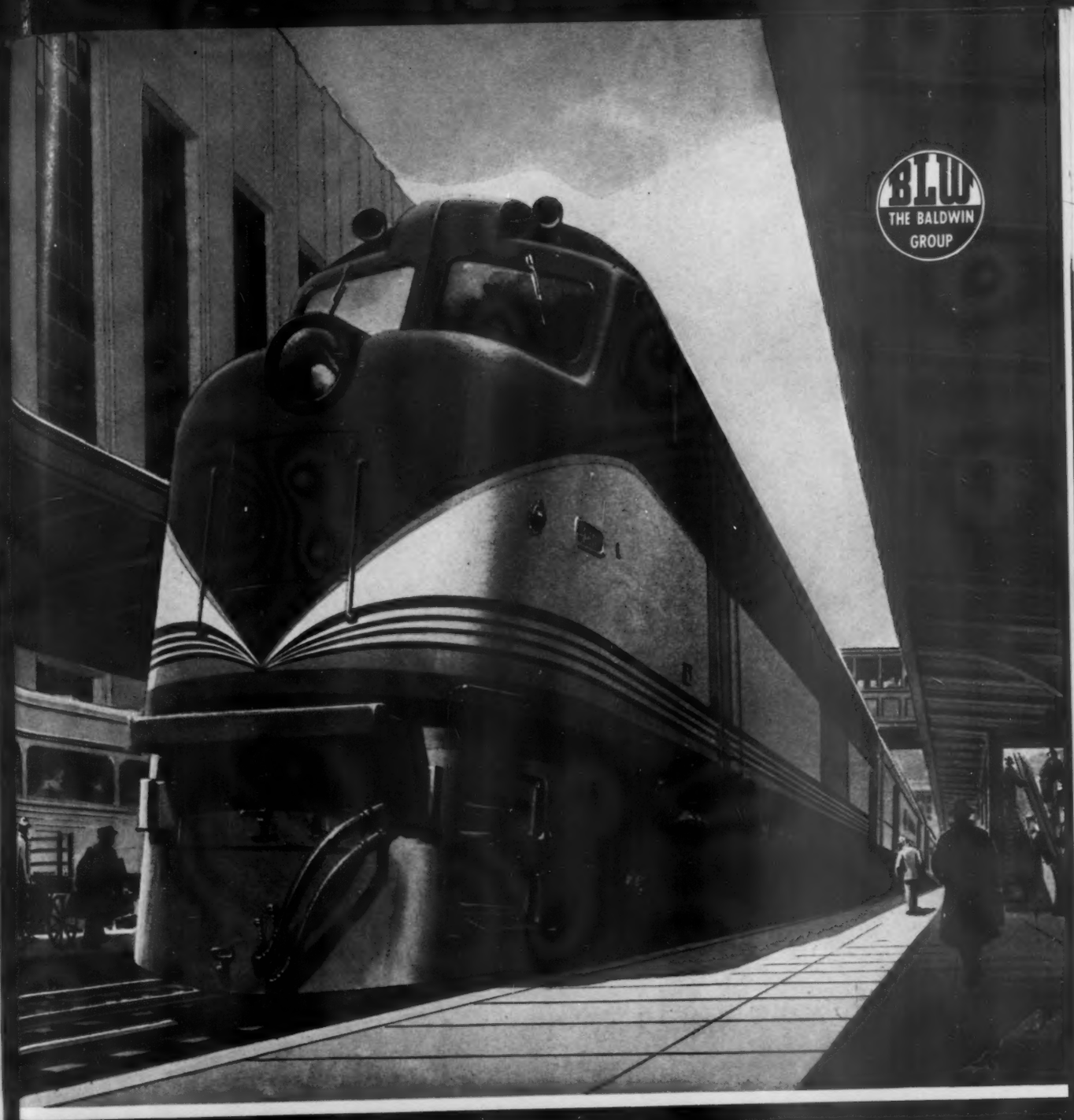
Commissary Paneling Counter Tops and Amphitheater Walls Naval Medical Center, Bethesda, Md.

Elevator Interiors, Municipal Building, Washington, D. C.

Cafeteria Table Tops, Supreme Court Building, Washington, D. C.

These are only a few of the thousands of heavy tasks Formica has been given by top architects and decorators. On its record in service it will get thousands more like them.

THE FORMICA INSULATION COMPANY, 4644 SPRING GROVE AVENUE, CINCINNATI 2, OHIO



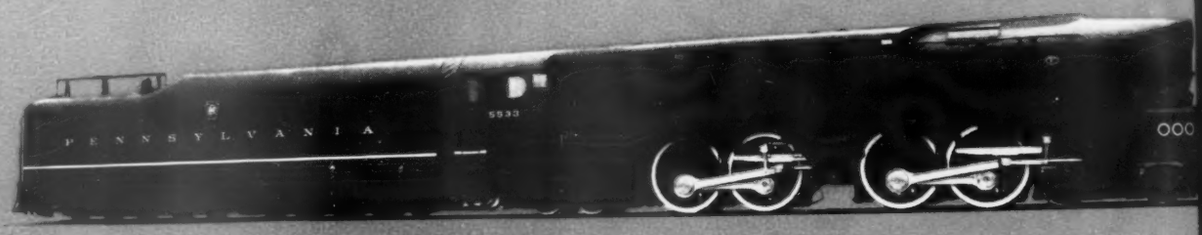
BLW
THE BALDWIN GROUP

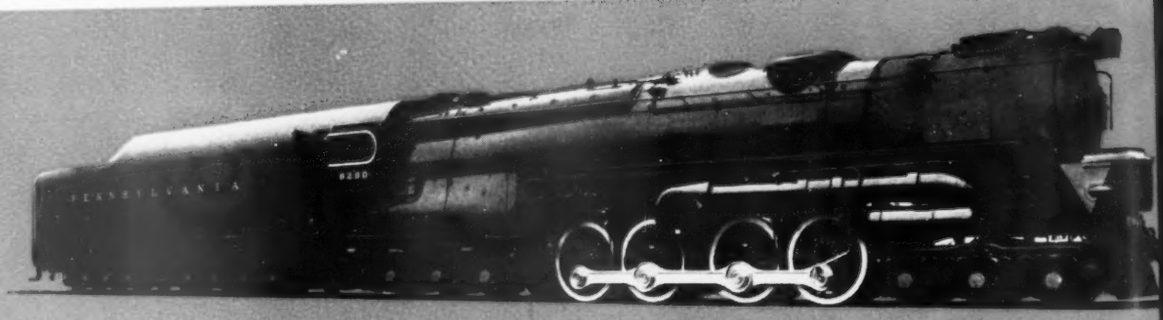
Pacing passenger progress

THE BALDWIN LOCOMOTIVE WORKS · PHILADELPHIA, PA.

power already on the rails

TO FIT YOUR PLANS FOR TOMORROW!





BALDWIN

DIESEL-ELECTRIC — A 3000-hp. single-unit diesel-electric road locomotive — first of its kind in the world — one of a complete line of diesel-electrics for all classes of service.

T-1 LOCOMOTIVE — Today's outstanding reciprocating steam locomotive type which has set new records for drawbar horsepower, indicated horsepower, low water rate and mechanical efficiency.

GEARED STEAM TURBINE — First of its type in America — an entirely new departure in steam locomotive development opening the way to higher speeds and greater operating efficiency for this class of power.

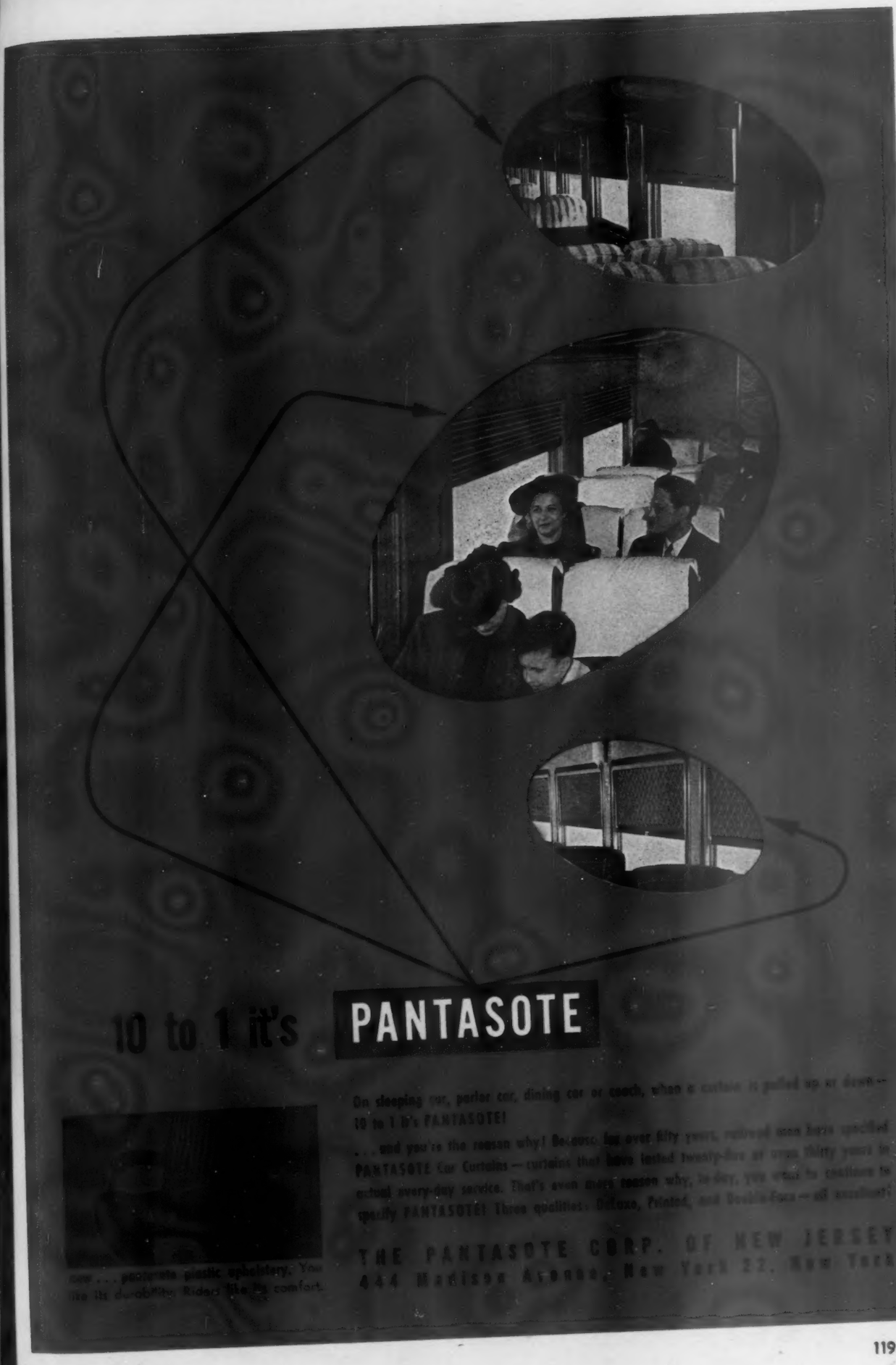
GG-1 ELECTRIC LOCOMOTIVE — A Westinghouse-Baldwin product that has met with outstanding success in the highly congested traffic area between New York, Washington and Harrisburg.

to expedite classification and transfer

In freight as well as in passenger service, Baldwin diesel-electric locomotives are helping to expedite the movement of cars in yards and terminals.

The sturdy railroad diesel-electric shown is a 2000-hp. locomotive for heavy transfer and road service. Two Baldwin 8-cylinder diesel engines, driving Westinghouse generators, furnish power for the six traction motors. The Baldwin Locomotive Works, Philadelphia 42, Pa., U.S.A. Offices: Philadelphia, Chicago, St. Louis, Washington, New York, Boston, San Francisco, Birmingham, Houston, Cleveland, Detroit, Pittsburgh, Norfolk.

BLW
THE BALDWIN GROUP


10 to 1 it's PANTASOTE
On sleeping car, parlor car, dining car or coach, when a curtain is pulled up or down—
10 to 1 it's PANTASOTE!
. . . and you're the reason why! Because, for over fifty years, railroad men have specified
PANTASOTE Car Curtains—curtains that have lasted twenty-five or even thirty years in
actual every-day service. That's even more reason why, today, you ought to continue to
specify PANTASOTE! Three qualities: Deluxe, Printed, and Double-Face—all excellent!
THE PANTASOTE CORP. OF NEW JERSEY
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new . . . pearl-grain plastic upholstery. You
like its durability. Riders like its comfort.

Mr. Brown Never Carried a Tray...

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153 COACHES for the New York Central

This order for 153 coaches constitutes the largest number of new passenger cars ever delivered to one railroad in one year's time. The coaches are of high strength, low alloy steel clad with stainless steel applied to the girder sheets.

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Each coach has luxurious reclining seats, individual seat lighting and wide windows.

Decorative effects are in keeping with the routes of the trains through southern Illinois and Indiana.

The delivery was accomplished in spite of unprecedented difficulties in building.

11 CARS
for the "Meadowlark" and "Whippoorwill" of the C.& E.I.

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20 COACHES for the Chicago *and* North Western

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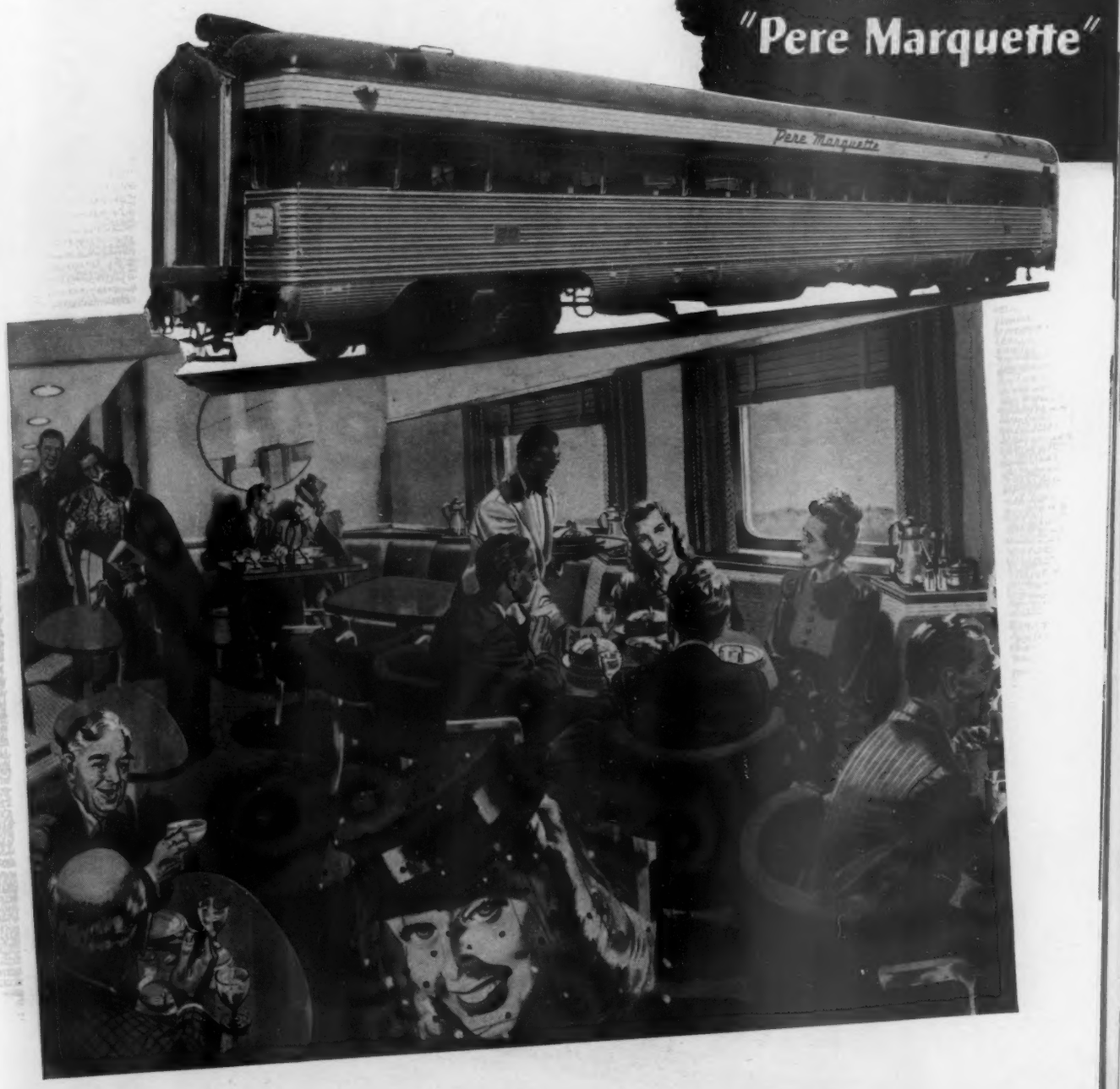

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produces cars

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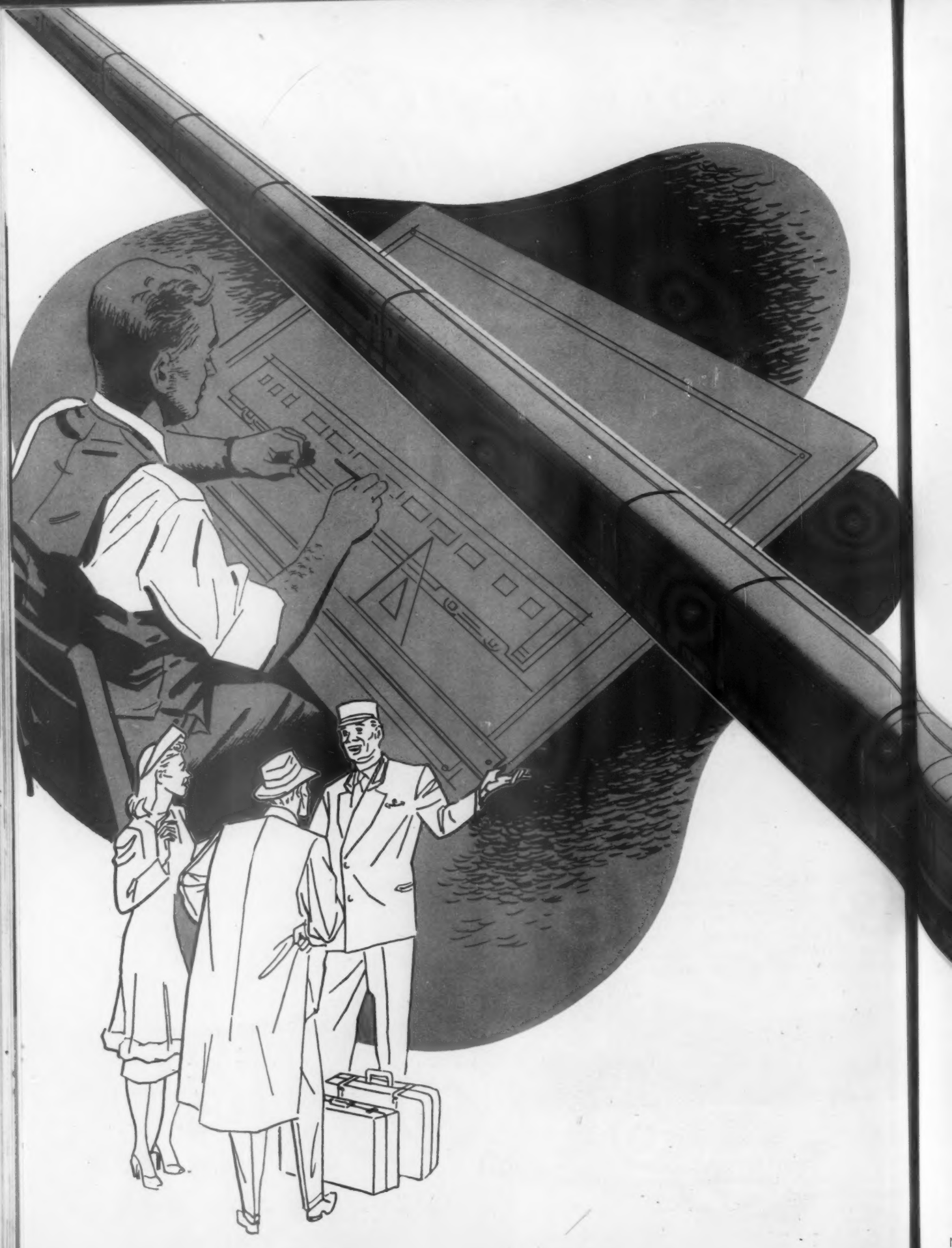

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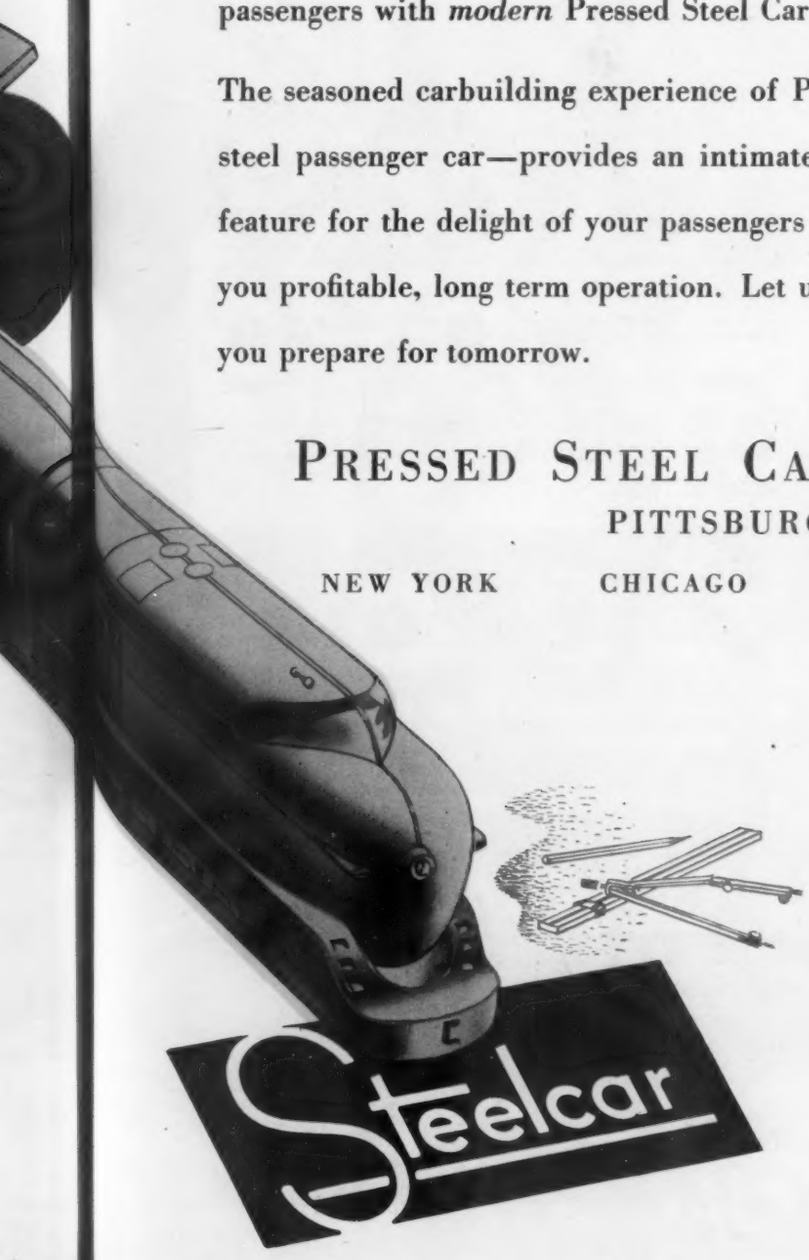

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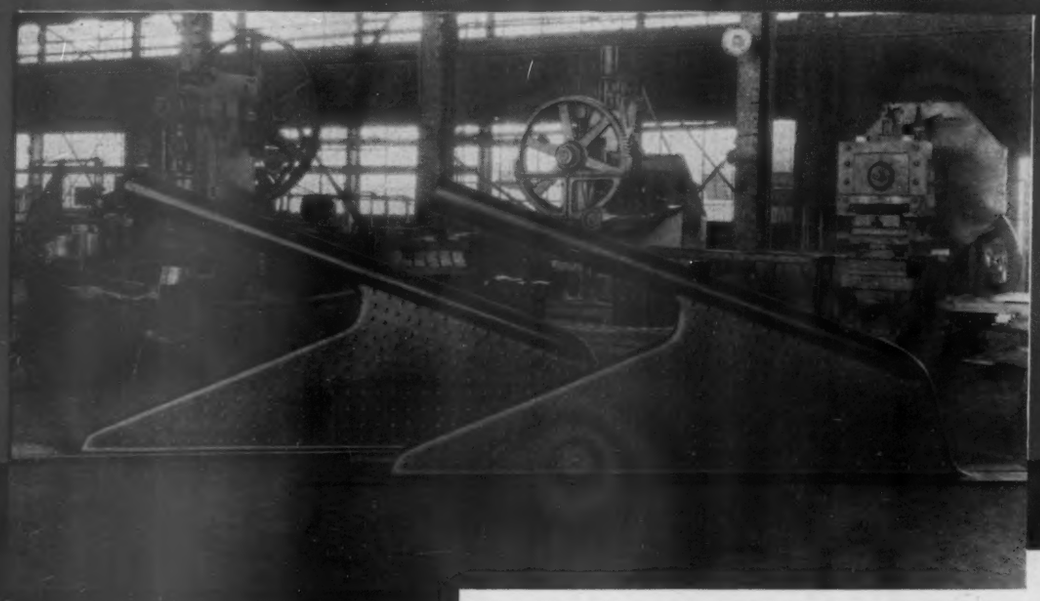

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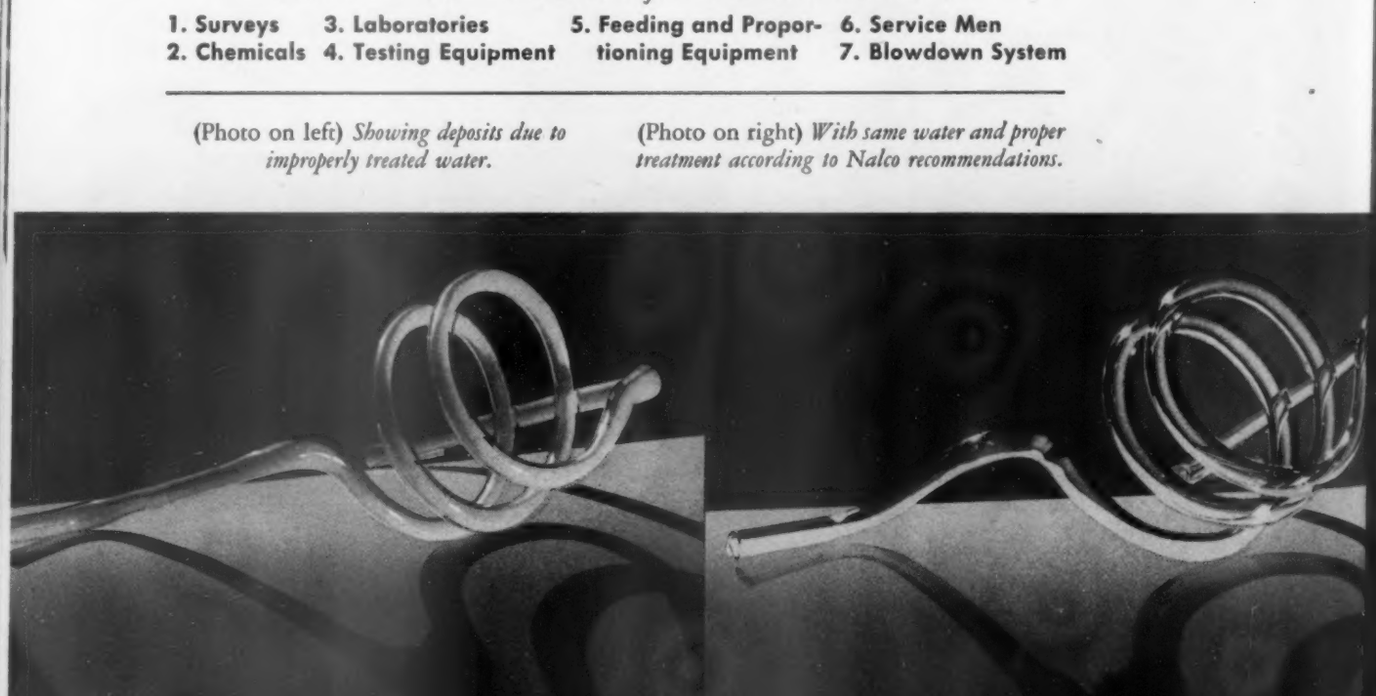
(Photo on left) *Showing deposits due to improperly treated water.*

(Photo on right) *With same water and proper treatment according to Nalco recommendations.*



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Railway Age

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★

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Passenger Progress at a Glance

HOPE DEFERRED: A year ago railroad officers were full of optimism about the future. They were expecting a period of good business, a period in which the railroads could realize on their unique capacity to provide a dependable and economical transportation service adapted to the needs and the means of their customers. Their optimism was reflected, in part, in the large orders for new passenger equipment, cars and locomotives, they placed with the builders, in the plans they made for new trains and faster schedules and improved facilities of all kinds. But strikes and material shortages, and other circumstances about which the railroads and the equipment builders could do little, have slowed up the delivery of the new trains, and many of the plans the railroads announced a year ago still remain plans. The optimism so generally expressed then has been tempered by these adversities, but not extinguished, and more plans have been announced, and more new cars and engines ordered, despite the discouraging delays of the past twelve months. Passenger progress has not gone ahead as the railroads and their customers had expected and hoped, but there has been progress, and the railroads have committed themselves to great expenditures of their own money to assure much more progress. The articles in this issue picture the situation as it is and the prospects for its improvement.

●

NEW STREAMLINERS: Although deliveries of new cars have been far below expectations in the past year, several completely new trains have been put in service in recent months, and passengers on many other trains have been enjoying the conveniences and comforts of post-war cars. One of the articles in this issue lists the streamlined trains now in service, including those lately added to the roster.

●

FASTER SCHEDULES: Among the tabulations of progress appearing in this issue one of the most impressive is the long list of trains that now operate on faster schedules than the railroads were able to maintain while the war was going on. In some cases pre-war service has been restored; in others the trains are faster than ever. Developments of this kind can be expected to go on as better equipment, better track and better signaling become available.

●

PROFIT OR LOSS?: Back in the days of the big depression, when many passenger trains ran almost empty and ticket agents too frequently had time to work crossword puzzles between customers, there grew up a group (some members of which were railroad men) that held the opinion that the railroads' passenger business was an unprofitable nuisance they would do well to rid themselves of. Passenger trains just got in the way of the freights that brought in the revenues, they contended. The success of the streamliners before the war did a lot to cool off the enthusiasm of this group, and the avalanche of customers that hit the railroads after Pearl Harbor added to their discomfiture, but there still are railroad men who can see nothing cheerful in the future of the passenger business. To offset their gloomy predictions are the views of another group, equally well informed, in which confidence prevails that the railroads can make the passenger business pay if they go about it in the right way. Which opinion is right the future will tell, but a convincing conclusion cannot be reached, says our leading editorial, unless and until the railroads make an all-out effort to discover, first, how much passenger business they can get in peace-time and, second, whether they can make any money from it.

●

OPTIMIST: Among the railroad executives who believe in the possibilities of passenger traffic as an earner of net income is the Monon's alert and aggressive president, John W. Barriger. His views are set forth in an article in this issue. The fixed plant the railroads have to provide for freight business seldom is fully utilized, he argues, and passenger service will be profitable, generally speaking, if it earns anything above the mere out-of-pocket cost of supplying it. And the railroads can do a lot to assure themselves of enough passenger business to exceed that minimum, because they can sell their passenger service directly to the immense travel market that is made up of people who want to go places but have a choice of means to get there. To succeed in selling railroad service to such people the railroads may have to amend some of their operating practices, and they surely will have to give them appealing service and attractive rates. Other articles indicate what the railroads are doing, and what they intend to do, to make the most of these opportunities.

●

ROADWAY WORK: In addition to new cars and more powerful and adaptable engines, the railroads have to have improved signal and communication facilities and better tracks to give the faster, more comfortable, safe and economical passenger service their customers are entitled to. Not only must tracks be designed and built to higher standards for high speed trains, they must be kept up to concert pitch so those trains can perform as they are capable of performing. An article in this issue tells what this means in terms of labor and expense and planning, and what progress has been made so far in reducing grades, straightening curves, replacing bridges, renewing rail and otherwise fitting the rail*road* to the requirements of progress.

●

BETTER SIGNALS: Getting trains from place to place in comfort and safety and in less time than ever before is not simply a matter of making them run faster. It is equally important to have a railroad on which the trains can keep moving. Recent advances in the design and use of signal systems and in immediate communication between trains and dispatchers and from train to train all contribute materially to the reduction of those delays that lengthen the passenger's trip without adding to his pleasure in it. One of our articles reviews some of these developments.

RESEARCH REPORT: Mr. Barriger has plenty of company in the ranks of railroad men who find much to be encouraged about in their analysis of the future of the passenger business. The report of the Passenger Traffic division of the Railroad Committee for the Study of Transportation —the railroads' joint research undertaking directed by Judge Fletcher—has been made available for the publication of an abstract in this issue (page 841), and its general tone is one of confidence and optimism. At the same time these practical railroaders recognize that passenger transportation is a field in which competition is keen and growing, and they have given thoughtful attention to ways and means of meeting that competition through improvements in railroad passenger service.

●

CARS ON ORDER: The list of passenger-train equipment the railroads are waiting for the manufacturers to complete adds up to 2,598 cars. Details of the orders placed by each road, and explanations of the use many of them expect to make of their acquisitions, appear in the article on page 797. On another page President Felton of the Railway Car Institute comments on the difficulties the builders have experienced in turning out the cars the railroads have ordered, and summarizes the new equipment program as it now shapes up on the builders' books.

●

APPLIED ELECTRICITY: Travelers who became accustomed to the comforts of modern air-conditioned and adequately lighted cars before the war need no glittering advertisements to tell them how much those cars excel some of the obsolescent equipment the railroads were forced to put back into service when the peak loads of 1944 and 1945 hit them. But further refinements of the electrical equipment of passenger cars are becoming available, as one of this issue's feature articles explains, and the trains now under construction and entering service establish new standards in the provisions made for unobtrusive, highly reliable equipment to please the customer.

●

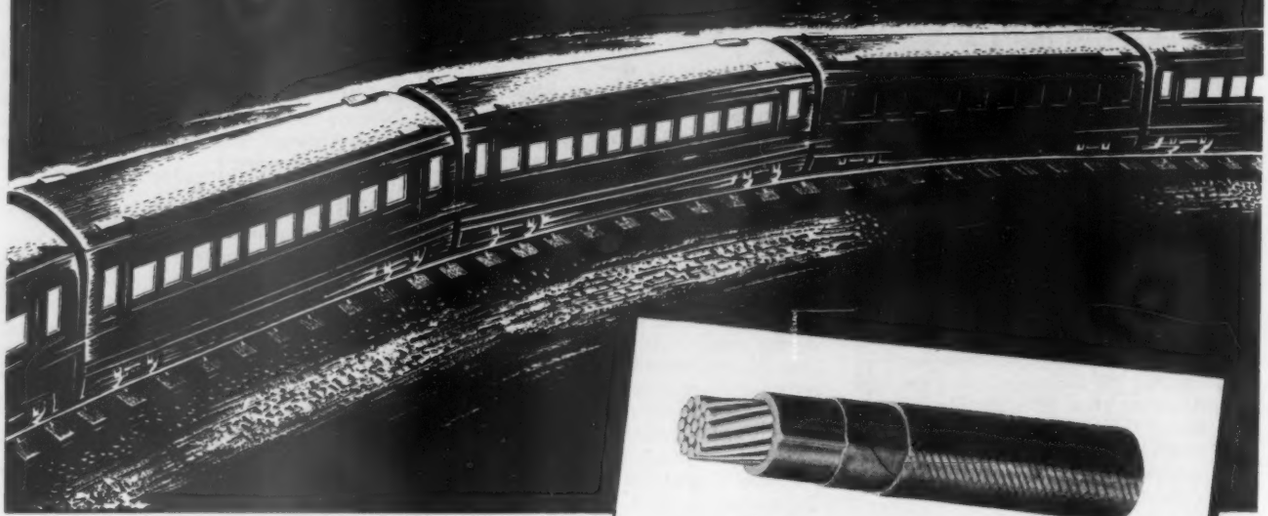
IMPORTANT INTANGIBLES: When a passenger gets on a new train he expects more comfort and convenience than he ever has had before, and the descriptions in these pages of new cars and locomotives indicate that he is getting them. But the railroads are improving their service to travelers in other ways, too. Employee training programs are being pressed, and improvements in advertising and selling methods have their part in the general effort to make every facet of passenger service shine.

●

POST-WAR POWER: The article reporting progress in the development of the design and use of passenger locomotives stresses the attention the railroads currently are giving to getting the maximum return from the new and costly locomotives they are buying. Improved Diesel-electrics have been put into production, and the steam engine builders have some new goods to put in the show window also.

DEPENDABLE CAR WIRING

PREVENTS CIRCUIT BLACKOUTS



Single conductor Okonite car wire with tape and saturated braid finish.

Specified by car builders, millions of feet of Okonite car wire assure passenger comfort

When lighting, heating or air conditioning fails, good-will for the road is lost. In many cases it needn't be lost — if the car wiring had been chosen for long life and failure-free operation.

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The same dependable performance that characterizes Okonite car wire is also built into Okonite-engineered signal cables, CTC aerial cables, communication cables, battery cables, shop wiring and power circuits. Write for full details on the kinds of cables you need. The Okonite Company, Passaic, New Jersey.

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OKONITE SINCE 1878 **insulated wires and cables**

Passenger Traffic — White Hope or White Elephant?

A big-city banker, a specialist in railroad securities and with the freedom from enthusiasm which characterizes his craft, not long ago was asked what he believed the chances were that passenger traffic could be developed into a reliably profitable department of railroad operations—in the face of the continuing improvement in highways and the inevitable increase in travel by air. His answer was, in substance, as follows:

"I do not know of any ceiling on the amount of business that can be done by an industry which caters wholeheartedly to the proclivity of the American people to enjoy themselves—and does not stint itself in publicity, while it offers the excellence of products or service necessary to make every customer a booster. To confirm this observation, take a look at the automotive industry, or Bermuda—an island which, except for the steamship and hotel people, would be only a dot on the map."

Informed Opinions Vary

A parallel opinion of the income possibilities of passenger traffic, from a strictly railroad point of view, is expressed by John W. Barriger, president of the Monon, in an article elsewhere in this issue. Such optimism regarding the possibilities of passenger traffic—particularly from the aspect of net income, rather than merely gross revenue—is by no means unanimous in the railroad industry. There are able and studious railroad men who—taking the figures of the frequently poor showing of passenger traffic as a contributor to net income in the past, in combination with estimates as to probable future automobile, bus and plane travel—arrive at somber totals in red ink as their forecast of the future effect of passenger traffic on the railroads.

Nobody can know for certain, however, whether the optimists or the pessimists about this business are right until a thoroughgoing effort has been made by the railroad industry (1) to find out how large this traffic can be in peace-time under competitive conditions, if it is made really attractive in comfort, convenience and price, and (2) to ascertain whether service can be provided which will meet the requirements of the first objective while still leaving a satisfactory margin of profit above expenses. Such a test of the potentialities of this traffic is now going to be made—the expenditures already assumed by the railroads for new equipment commit them to the experiment. It now remains for the whole industry, equally for the doubters as for those who are sanguine, to get behind this effort so that the results will really be conclusive, which they cannot be unless the endeavor is genuinely wholehearted.

This paper believes, for a number of reasons, that a thorough test of passenger traffic's ability to contribute to net income could not very well be denied, without violation of sound business policy. Among these reasons are the following:

(1) that some minimum volume of passenger service must be provided anyhow, and it is worth the effort to find out whether it can be made to pay its way;

(2) that this business, under favorable conditions, has shown its ability to gross over $2 billion, and no such volume of potential business should be lightly discarded without a struggle both to hold onto the volume and to find means of making it yield a satisfactory net;

(3) that the I. C. C. figures showing high operating ratios for this service are misleading, in that on most railroads passenger operations are a by-product of freight service and anything they yield above direct costs is actually a contribution to net;

(4) that there would inevitably be an unfavorable reaction in public relations if the railroads should arbitrarily minimize their passenger operations without first giving a conclusive demonstration of the revenue results of a thoroughly modern and up-to-date service.

Since the railroads—or, at any rate, most of them—are embarked upon this great effort, it is highly desirable that the whole industry and its responsible officers should familiarize themselves as thoroughly as possible with the characteristics of this business, with the problems which it presents to principal railway departments, and with the present plans and accomplishments of the railroads and the manufacturers who are the leaders in this endeavor. This issue of *Railway Age*, in its advertising as well as its editorial pages, is given over completely to providing information to meet this need.

The Lessons of History

Since no economic problem can be understood without some knowledge of its past history, the enormous fluctuations which have occurred in passenger business should be borne in mind. The essential figures appear in the accompanying table, which gives the yearly statistics back to 1920. Here is a business which declined two-thirds in volume and 70 per cent in revenue from 1920 to the low point in 1933, and then recovered 80 per cent in volume and 45 per cent in revenue by 1941, before the war had any effect upon it. During

the war, revenue exceeded that of the 1933 low point by 335 per cent and volume (passenger-miles) rose fivefold. In 1946, with the war rapidly fading into history, passenger traffic and revenues are declining—but, in September of this year, while passenger revenues were down more than one-third from September in the peak war year of 1944, they were still more than double those of September, 1941, just before Pearl Harbor.

Here, then, is a business which has already demonstrated its capacity to gross all the way from $500 million to more than $2 billion, and to operate at a profit ratio varying between +32 and –29—which is another way of saying that it is a business which can come close to making or breaking the railroad industry, depending on whether or not means can be found to maximize its gross and keep its costs under control.

The table plainly shows that the service was unwisely priced during the latter half of the 1920's, since during that period the operating ratio constantly mounted while the passengers per train declined. It is true that the *average* fare was steadily reduced during those years—but the "basic" rate, which was the one which the public bore in mind, was rigidly retained at 3.6 cents. The rapid improvement which came when rates were reduced and service began to be modernized in the mid-thirties is also reflected in the figures—and suggests an answer to those who are unduly frightened at the prospects of competition. The railroads, with relatively modest improvements in equipment (i. e., in ratio to total equipment) and in service in the late thirties, demonstrated their ability almost to double their volume of traffic in the face of rapidly growing competition from both highway and air; and there are 7½ million more American in 1946 than there were in 1941.

26 Years' Variations in Passenger Traffic

	Rev. Passenger-Miles (Billions)	Passenger Revenue* (Millions)	Passenger Service Operating Ratio %*	Avg. Rev. per Passenger-Mile (cents)	Avg. Passengers per Train
1920	47	$1,702	85	2.75	83
21	37	1,461	86	3.09	68
22	35	1,416	84	3.03	65
23	38	1,506	81	3.02	67
24	36	1,431	83	2.98	63
25	36	1,420	84	2.94	63
26	35	1,414	85	2.94	61
27	34	1,340	90	2.90	59
28	32	1,270	92	2.85	56
29	31	1,295	90	2.81	55
30	27	1,063	102	2.72	49
31	22	825	111	2.51	45
32	17	592	119	2.22	40
33	16	517	122	2.01	43
34	18	544	124	1.92	47
35	18	554	129	1.94	48
36	22	628	119	1.84	55
37	25	665	120	1.79	59
38	22	611	122	1.87	55
39	23	632	121	1.84	58
40	24	635	123	1.75	61
41	29	751	114	1.75	73
42	54	1,348	78	1.92	126
43	88	2,080	65	1.88	190
44	96	2,248	68	1.87	201
45	92	2,173	77	1.87	190

* Includes revenue from "head end" traffic as well as revenue from passengers.

The figures also indicate with great eloquence that passenger service cannot hope to be very profitable under the low rates now required to attract a high volume of business, unless a relatively heavy average trainload can be secured. This was easy to achieve in war-time, when lack of other transportation facilities drove passengers to trains even under conditions where railroad service is less convenient than alternative means of travel would be. Such high average trainloads will be hard to maintain now, unless the railroads resolutely and quickly withdraw trains on all runs and in all territories where a high quality of service and attractive rates fail to produce remunerative trainloads. The railroads are a mass-transportation instrument, and it is only a mass job that they can do more economically than their rivals. Only by taking full advantage of their intrinsic economies and ceasing to provide service where such economies do not operate in their favor can the railroads hope to make the passenger business as profitable as it should be. And, under private enterprise, it is only to a profitable passenger service that the public can look for maximum comfort, convenience and economy.

The Shape of Passenger Trains to Come

The cars and locomotives which will make up the new passenger trains of the immediate future will be like those in the trains installed in substantial numbers since the middle 1930's. The characteristic features of the cars in these trains are reduced weight, improved riding comfort, increased interior cleanliness, seats designed with an eye to passenger comfort, more lounging space, and distinctive exteriors. The ramifications of these basic characteristics have been in many directions.

Take the matter of cleanliness, for instance. This is one of the significant results of air conditioning. It has expanded the narrow limitations within which color choices for interior treatment could be made. It has revolutionized the color and style of apparel for traveling.

Intensified efforts are still being put forth to effect further weight reduction. While the possibilities of reducing the weight of the car body have been pretty well exhausted, attention is now turning to all of the exterior and interior items of equipment which are an essential part of the finished car. On the outside of the car, couplers, draft gears, air-brake equipment, mechanical part of the brake apparatus, and trucks have all been subjected to intensive study. The ultimate results are in the realm of economics rather than engineering. Inside the car, seating is the most important single item. Some of the lightest-weight seats were applied in the earliest of the streamliners.

One of the important items in weight saving on lightweight passenger cars arises from the ability to carry the light car bodies on four-wheel instead of six-wheel trucks. These trucks have been and still are the subject of intensive study for the purpose of developing the smoothest possible ride. Developments in diaphragms and in passenger-car couplers and draft gears are also contributing to the attainment of this objective as well as to the elimination of noise.

Likewise, the pattern of passenger motive power for some years to come is already established. Several new Diesel locomotives designed during the past few years are now being built. In these locomotives are numerous improvements over those of earlier design, representing stepped-up engine output, improvements in electrical controls and regulation, in auxiliary drives and, in at least one case, a significant change in chassis construc-

tion. None of these advances, however, has changed the essential characteristics of a Diesel-electric locomotive.

For years to come the steam locomotive with which the railroads will deal will be the reciprocating steam locomotive with which they are thoroughly familiar. It, too, has been refined. A number of current features of design have produced locomotives which are demonstrating high availability and a high degree of maintenance economy.

Other types of locomotives are now in various stages of development. A steam-turbine locomotive with direct mechanical transmission is now in service on the Pennsylvania. Several steam-turbine locomotives departing in general arrangement from the customary steam-locomotive form are scarcely yet beyond the drawing board. There is also the gas turbine and the pulverized-coal development which are moving steadily forward. No doubt these will all take form and, in due time, make their appearance on the rails. For the next four or five years, however—the period within which great changes will be made in the character of passenger trains and passenger service—the trains will be moved either by Diesel-electric or reciprocating steam locomotives.

It has been said in these columns before that major developments resulting from invention or innovations in engineering do not make their appearance at a steady pace year after year. They occur at relatively infrequent intervals. Their effect in improving railway service, operation and economy, however, continues more or less steadily for many years with the progressive installation of the new designs.

At the present time the forms of the new rolling stock and motive power with which the railways will modernize their passenger service are already available for inspection and appraisal.

Progress Despite Handicaps

The articles in this issue describe the passenger progress that has been made since V-J day and contain a number of tables listing this progress graphically. Long before the war was over, railway executives and passenger traffic officers had made plans for improved service that was intended to be so extensive as to constitute a veritable revolution in railway passenger business.

But with the coming of peace a wide variety of handicaps, chief among them material shortages brought about by recurring labor difficulties, instantly made their appearance to prevent the prompt and complete fruition of these plans, at least insofar as the installation of the large number of streamlined trains planned was concerned. Since the installation of these new trains was to be the basis of the planned passenger service improvement, the fact that instead of the expected 50 or more new trains to have been delivered by the present time there has been but a mere trickle of deliveries, amounting to only about 10 new trains, would have discouraged any less resilient and ingenious group than railway passenger traffic officers.

A study of the table in one of the articles in this issue, showing the schedule improvements that have been made since the war, will clearly indicate the effective work that has been done along these lines. It is another amazing example of the resourcefulness of the managements of American railways. In view of this record, it may be confidently stated that no other American industry has achieved greater improvements under similar handicaps.

Meanwhile, the very important business of getting the prospective passenger on the train after he actually begins planning a trip has not been neglected. The ticket sales forces of the railways, like the sales forces of every industry whose services and products were in great demand during the war, had, it must be admitted, adopted a "take it or leave it" attitude. Numerous efforts were made during the war years to eliminate this unfortunate attitude, and a certain measure of success was achieved despite the almost impossible conditions then prevailing. These efforts have been redoubled since the war, and are producing results, although there is much still to be done in this direction.

There can be no doubt as to the potential passenger traffic market. The most optimistic estimates of vacation travel last summer were exceeded by at least 25 per cent. The problem that faces railway passenger officers is to secure as much of the business involved in this tremendous market as is possible. What has already been accomplished and what is being planned, as outlined in this issue, give a rather clear indication that if the railways continue their passenger service improvements, their passenger revenues will find a peace-time level much higher than any shown since the peak peace-time years in the early 'Twenties.

Success Calls for More Than Streamliners

The rehabilitation and further improvement of the properties of the railways to enable them to remain in the forefront of passenger transportation presents railway managements with many important decisions. One of the most important of these is, whether in the rush for high-speed, colorful streamlined trains—and a rush is definitely on—the fixed properties that must carry or service these trains are to receive the attention they will require.

It is quite evident at the moment, as it appeared to be in their previously prepared post-war plans, that streamlined equipment dominates the thinking on most railways for holding and creating passenger business—in fact, is their trump card. That they hold such a card is fortunate, because it alone may spell success for their plans—especially if they play the rest of their hand well, which means the improvement and maintenance of their fixed properties affecting passenger train operations, including roadbeds, tracks, bridges, passenger stations, and locomotive and train-servicing facilities, to the standards that will be required by their improved schedules and luxurious passenger train equipment.

Many railway managements realize this, as is evidenced in their present and prospective plans for improvements already planned or under way. Those who do not, will have been poorly advised if they think

the fast schedules, comfort and safety visualized in their new equipment can be obtained on poorly maintained tracks of less than a high standard of construction. They will have been poorly advised if they think drab, outmoded, uncomfortable and depressing passenger stations will not put a damper on railway passenger business. And they will be fooling themselves if they are led to believe that quick train turn-arounds and short station stops can be made without adequate modern locomotive and train servicing facilities.

No one on the railways who would throw out such precautionary comments—and there are many in the engineering and maintenance of way and structures departments who would—wants to dampen any ardor for the finest passenger train equipment available, if only for the selfish reason that this equipment is generally recognized as easier on the track than the much heavier equipment of earlier design. At the same time, however, they know that high speed with comfort demands something more than just track—that it calls for speedways, with all of the refinements it is possible to build into them. If they are correct, it would be better for the railways to recognize this now, before they put too many of their "eggs" into equipment, than to find it out later—the costly way—from customers dissatisfied by a rough ride and unnecessary delays.

The problem is to balance improvements in equipment with improvements in essential elements of the fixed properties. It is no more feasible for equipment to outstrip the fixed properties than for the fixed properties to outstrip equipment. The greatest progress—and success—in future railway passenger transportation calls for comparable attention to both.

Why Fear Free Enterprise?

Many people in this country seem to feel that we are doomed somehow to face another great "bust" just as soon as the demands backed up by the war have been filled. They seem reconciled to disaster ahead. I feel strongly that these fears are based on unreasoning defeatism and I am convinced that we have the knowledge and ability to handle our affairs in such a way as to maintain a high level of employment with an expanding economy.

The achievements of our American free enterprise have been unrivalled both in peace and in war. It is the ambition of other industrial nations to learn from and copy American industrial methods, even though they may have different economic concepts. It is no concern of ours how the people of other countries choose freely to live. But we Americans are determined to maintain our free enterprise system, the strength and vitality of which have been proved under fire. The incredible scientific and technical advances we made during the war add incalculably to our opportunities in peace.

Why should we fear our ability to direct the energies of free enterprise for the vast expanding needs of our common welfare? Of course there are today problems resulting primarily from the tremendous job we did in the war. We can lick any problem we have if all groups will face it together with mutual determination to find the solution.

We are now in the throes of settling management and labor differences, but I take encouragement in the fact that both industrial and labor leaders . . . are fully aware of the necessity of finding constructive and peaceful means of working out their relationship.

—Secretary of Commerce W. Averell Harriman in an address before the New York Herald-Tribune Forum.

Train Delays—Everybody's Business

Delays en route or in starting from initial terminals are one of the major problems to be met by the railways in operating dependable, high-speed passenger trains. As high-lighted elsewhere in this issue, delays which were merely nuisances when average passenger train speeds were about 40 m.p.h., suddenly assume large proportions when overall average speed of 60 m.p.h. or more is put into effect. Serious delays to passenger trains invariably result in one or more of a number of undesirable conditions, viz., late trains; general disruption to the schedules of inferior trains; and excessive speed, which itself leads to a rough, uncomfortable ride, and even at times to an unsafe condition when attempts are made to recover time in areas where speed restrictions are required.

The adherence to passenger train schedules can result only from co-operation between the officers and employees of many departments of the railroad; the operating department by itself cannot do the job. The traffic department, by its insistence on an excessive number of regular stops, combined with a fast schedule, can make on-time performance virtually impossible. Likewise, too frequent requests for special stops can have the same effect.

The mechanical department, too, has a responsibility in the maintenance of passenger train schedules. Locomotives and cars must be ready when they are needed, and in condition to function without stops for repairs en route. At servicing points, the required forces, tools and supplies must be ready for use immediately upon the arrival of passenger trains, and not a minute or two later, as is so often the case.

The engineering and maintenance of way forces are constantly striving to find ways to eliminate or reduce permanent physical conditions that reduce the speeds of passenger trains at various points. These groups, however, must also endeavor so to plan their work that it will be accomplished with the minimum of interference to train operation. Whenever possible, it is usually better to have a single, lengthy, temporary speed restriction rather than to introduce numerous short ones.

The maintenance of signals to insure proper indications at all times is mere routine for the signal department. But what of the maintainer who disregards train schedules in checking his signals and thereby delays an important passenger train? He can cause as much lost time as a false "stop" indication.

The operating department, of course, is charged with the responsibility of running trains, and it is through failures within this department that delays can most easily occur. The train dispatcher who does not keep inferior trains advised of the performance of superior trains is equally responsible with the crews of inferior trains for delays caused by running on "short time." Likewise, the dispatcher who fails to consider the fact that in many cases train-order operators also sell tickets and load baggage, may be the cause of excessive delays at intermediate stations. In short, on-time performance of high-speed passenger trains is the direct concern of a large number of employees in many departments, and requires the closest possible degree of cooperation among them.

The vacation spots of America were visited by an unprecedented number of travelers last summer, of whom a large percentage traveled by rail

Passenger Progress Begins Again

Service is as yet by no means up to the desirable standard, but rapid strides are being made in that direction

FOR some time prior to the end of the war, railway officers were planning for a vastly improved post-war passenger service. These plans were intended to be put into effect immediately upon the end of the war. That many of them are as yet held in abeyance is the result of factors outside the control of the railways. Even though the service has not been improved to the extent that was hoped for—or to the extent that it will be improved within a few months—there have been a large number of evidences that this advance planning was not in vain.

Progress in railway passenger service—halted by the war and retarded after the war by the tremendous load of passengers which the railways were called upon to carry—has begun again. Now, the reconversion to peace-time schedules has been practically complete. New streamliners have been placed in service and many more are scheduled for early delivery.

Furthermore, there are ambitious plans for additional improvements and every day brings forth some new announcement of improved passenger service.

Handicaps to Progress

Immediately after V-J day, the problem of handling returning troops became serious, and in November and December, 1945, and January, 1946, when troops returning from the Pacific began arriving in large numbers and there was a

further huge movement from the European theater of operations, the problem of troop handling became more acute than it had been at any time during the war. Instead of busying themselves with improving post-war passenger service, the railways were called upon to exert every effort to accommodate the veritable avalanche of troops descending from ships at all ports and naturally extremely eager to get home.

As was the case throughout the war, railway officers gave their first attention to the problem of moving troops, and did a remarkable job in this connection. Obviously it was impossible to supply for all troops the type of accommodation they wanted, and which the railways would have been glad to have given them if possible. Accordingly, there were some complaints which were given rather wide newspaper publicity, but Army and Navy officers who really knew that the railways were performing feats previously considered impossible, were loud in their praise of the way this unprecedented troop movement was handled.

Table I. Through Transcontinental Sleeping Cars Established in 1946

Route	Between
N. Y. C.—C. & N. W.—U. P.	New York-Los Angeles
N. Y. C.—C. & N. W.—U. P.—S. P.	New York-San Francisco
N. Y. C.—A. T. & S. F.	New York-Los Angeles
N. Y. C.—C. R. I. & P.—S. P.	New York-Los Angeles*
N. Y. C.—C. B. & Q.—D. & R. G. W.—W. P.	New York-San Francisco*
Penna.—C. & N. W.—U. P.	New York-Los Angeles
Penna.—C. & N. W.—U. P.	Washington-Los Angeles
Penna.—C. & N. W.—U. P.—S. P.	New York-San Francisco
Penna.—C. & N. W.—U. P.—S. P.	Washington-San Francisco
Penna.—A. T. & S. F.	New York-Los Angeles
Penna.—C. R. I. & P.—S. P.	New York-Los Angeles*
Penna.—C. B. & Q.—D. & R. G. W.—W. P.	New York-San Francisco*
B. & O.—C. & N. W.—U. P.—S. P.	Washington-San Francisco
B. & O.—A. T. & S. F.	Washington-Los Angeles

* Operated every other day

New trains have been inaugurated in large numbers since V-J day and the schedules of existing trains have been materially shortened

Getting the Boys Home

Getting the boys back home in a hurry, however, had the effect of delaying the return of civilian passenger service to pre-war standards. But as soon as the worst of the troop-handling problems had been solved, attention was immediately turned to improving passenger service for civilians. Quickening of schedules began and trains were, in general, no longer uncomfortably crowded. This improved condition lasted for only a few months, however, because with the advent of summer and the vacation period, Americans became a nation on the move and vacation travel rose to unprecedented heights.

The greatest difficulty in restoring service has been found in the inability to obtain deliveries of new passenger equipment on order. The shortage of materials has been responsible for this in some measure, but the principal delay has been caused by literally hundreds of strikes in the industries manufacturing materials and equipment for railway passenger cars. That the car builders have been able to make any deliveries at all under the conditions existing is very much to their credit. With continuing material shortages and labor uncertainties, it is difficult to predict just how fast the new equipment will be delivered, but there is a statement in this issue from President Samuel Felton of the American Railway Car Institute which gives enlightenment on this situation.

Dining Car Service

Somehow, some way the railways managed to feed the multitudes during the war, with particular attention being given to feeding troops. True, civilian travelers frequently had long waits at meal times; the quality of the meals often

deteriorate to a lamentable degree; and the service was frequently poor. On the other hand, it should be remembered that the railways on this continent were the only ones in any of the nations engaged in all-out war effort that attempted to provide dining car service at all.

The handicaps faced by the dining car departments were numerous and severe. In the first place, no dining cars were permitted to be built during the war and the existing fleet of dining cars was called upon to handle up to 10 or 20 times as many customers as ever had been handled previously. There was no draft deferment for dining car crews, with the result that the available dining cars had to be manned with what were frequently makeshift crews, and not infrequently the cars had to be put in charge of inexperienced stewards.

There are a large number of new dining cars on order, as is indicated elsewhere in this issue, and this will relieve one of the problems. It is now possible to obtain experienced supervision and labor to man the cars and this improvement is becoming more manifest daily. However, the dining car departments are still faced with the problem of obtaining enough and proper food for their increased patronage, and this problem shows little sign of immediate improvement. It cannot be solved, of course, until the entire national problem of obtaining foods has been solved.

Meanwhile, the dining car departments, accustomed as they were during the war to working under handicaps, are doing a better job than most other restaurants in the country. Railway officers are by no means content with this and are seeking other means to restore dining car service to its peace-time standard of excellence. To do this, several railways have established schools where dining car employees may learn the refinements that formerly made eating on trains such a pleasurable experience.

Transcontinental Pullmans

For some years prior to the war plans were advanced from time to time for the operation of through sleeping cars between New York and Washington, D. C., on the one hand, and the Pacific Coast and Texas on the other, but certain operating difficulties and other matters interfered with their fruition. The spring of 1946 witnessed the first use of transcontinental sleeping cars on the part of the railways on any sizable scale. A number of years ago a through car was operated on a daily basis between New York and San Francisco, Cal., via the Pennsylvania to Washington, the Southern to New Orleans, and the Southern Pacific beyond. However, this year may be said to witness the first real effort to supply numerous transcontinental sleeping cars. Table I shows how such operations have increased since the first of these through cars were established.

In general, the railways report that such cars have been well patronized, although there have been a number of operating problems involved in transferring the cars from one station to another in Chicago. However, the true test of through transcontinental sleeping car service will not be arrived at until through transcontinental trains are put in operation. Under the present arrangement the passenger saves no time compared with the previous system of transferring from one train to another in Chi-

Table II. Through Cars to the Southwest Established in 1946

Route	Between
Penna.—M. P.—T. & P. (Through Train)	New York-Ft. Worth
Penna.—M. P.—T. & P.	New York-El Paso
Penna.—M. P.—T. & P.	Washington-Ft. Worth
Penna.—M. P.—T. & P.	New York-Galveston
Penna.—M. P.—T. & P.	Washington-Houston
Penna.—M. P.—T. & P.	New York-San Antonio
Penna.—M. P.—T. & P.—N. of M.	New York-Mexico City
Penna.—St. L. S. F.—M. K. T.	New York-San Antonio
B. & O.—M. P.—T. & P.	Washington-Houston
B. & O.—M. P.—T. & P.	Washington-Ft. Worth
B. & O.—St. L. S. F.—M. K. T.	Washington-San Antonio
N. Y. C.—St. L. S. F.—M. K. T.	New York-San Antonio
N. Y. C.—St. L. S. F.—M. K. T.	New York-Dallas
N. Y. C.—St. L. S. F.—M. K. T.	New York-Ft. Worth
N. Y. C.—M. P.—T. & P.	New York-Ft. Worth
N. Y. C.—M. P.—T. & P.	New York-Houston
N. Y. C.—M. P.—T. & P.—N. of M.	New York-Mexico City
C. & O.—N. Y. C.—M. P.—T. & P.	Washington-San Antonio
N. Y. C.—St. L. S. F.	New York-Oklahoma City
B. & O.—St. L. S. F.	New York-Oklahoma City
Penna.—St. L. S. F.	New York-Oklahoma City

Table III. Schedules Shortened by One Hour or More

Railway	Train	Between	Time Saved* Hr.	Min.
Alton—C. B. & Q.	33	St. Louis-Kansas City	1	40
A. T. & S. F.	Super Chief	Chicago-Los Angeles	2	0
A. T. & S. F.	El Capitan	Chicago-Los Angeles	2	0
A. T. & S. F.	Chief	Chicago-Los Angeles	1	50
A. T. & S. F.	California Limited	Chicago-Los Angeles	3	45
A. T. & S. F.	Scout	Chicago-Los Angeles	3	15
A. T. & S. F.	Grand Canyon Limited	Chicago-Los Angeles	9	35
A. T. & S. F.	Ranger	Chicago-Galveston	1	0
A. T. & S. F.	Grand Canyon Limited (connection)	Houston-Clovis	3	25
A. T. & S. F.	Scout (connection)	Barstow-San Francisco	2	30
B. & O.	Washington-Pittsburgh-Chicago Express	Washington-Chicago	1	10
B. & O.—Reading—C. N. J.	Capitol Limited	New York-Chicago	1	40
B. & O.—Reading—C. N. J.	Shenandoah	New York-Chicago	1	25
B. & O.—Reading—C. N. J.	Diplomat	New York-St. Louis	1	30
B. & O.—Reading—C. N. J.	National Limited	New York-St. Louis	1	0
C. N. R.	Ocean Limited	Montreal-Halifax	2	20
C. N. R.	Scotian	Montreal-Halifax	4	15
C. N. R.—C. V.—B. & M.	New Englander	Montreal-Boston	1	0
C. & E. I.—L. & N.—C. of G.—A. C. L.	Dixie Limited	Chicago-Jacksonville	3	45
C. & E. I.—L. & N.—C. of G.—A. C. L.	Dixie Flyer	Chicago-Jacksonville	1	35
C. & N. W.—U. P.—S. P.	City of San Francisco	Chicago-San Francisco	2	5
C. & N. W.—U. P.—S. P.	Overland Limited	Chicago-San Francisco	13	45
C. & N. W.—U. P.—S. P.	Pacific Limited	Chicago-San Francisco	10	15
C. & N. W.—U. P.—S. P.	San Francisco Challenger	Chicago-San Francisco	3	45
C. & N. W.—U. P.	City of Los Angeles	Chicago-Los Angeles	2	0
C. & N. W.—U. P.	Los Angeles Limited	Chicago-Los Angeles	14	0
C. & N. W.—U. P.	Pacific Limited	Chicago-Los Angeles	12	0
C. & N. W.—U. P.	Los Angeles Challenger	Chicago-Los Angeles	5	35
C. & N. W.—U. P.	City of Portland	Chicago-Portland	2	0
C. & N. W.—U. P.	Portland Rose	Chicago-Portland	9	25
C. & N. W.—U. P.	City of Denver	Chicago-Denver	1	5
C. B. & Q.	Denver Zephyr	Chicago-Denver	1	5
C. B. & Q.	Adventureland	Kansas City-Billings	2	35
C. I. & L.	Day Express	Chicago-Louisville	1	40
C. I. & L.	Night Express	Chicago-Louisville	1	30
C. R. I. & P.	Midcontinent Special	Minneapolis-Kansas City	1	0
C. R. I. & P.	Memphis-Californian	Memphis-Tucumcari	2	50
C. R. I. & P.—S. P.	Golden State Limited	Chicago-Los Angeles	13	45
C. R. I. & P.—S. P.	Californian	Chicago-Los Angeles	4	55
C. & S.—Ft. W. & D. C.	Gulf Coast Special	Denver-Dallas	1	0
F. E. C.—A. C. L.—R. F. & P.—Penna.	Havana Special	Miami-New York	2	15
F. E. C.	Gulf Stream	Miami-Jacksonville	1	20
G. N.	Winnipeg Limited	St. Paul-Winnipeg	1	30
G. N.	The Canadian	Vancouver-Seattle	1	20
I. C.	Panama Limited	Chicago-New Orleans	1	30
I. C.	Louisiane	Chicago-New Orleans	1	5
I. C.	Creole	Chicago-New Orleans	1	25
I. C.	Daylight	Chicago-St. Louis	1	20
I. C.	Hawkeye	Chicago-Sioux City	1•	0

* Where the time saved eastbound and westbound is not the same, the maximum saving is given.

(Table continued on next page)

(Table continued from preceding page)

Railway	Train		Time Saved* Hr.	Min.
I. C.	Land O' Corn	Chicago-Waterloo	1	5
I. C.	Creole	Memphis-Louisville	1	0
I. C.—C. of G.—A. C. L.	Seminole	Chicago-Jacksonville	1	0
K. C. S.—L. & A.	Southern Belle	New Orleans-Kansas City	2	0
K. C. S.	Flying Crow	Kansas City-Port Arthur	4	5
L. & N.—C. of G.—A. C. L.	Flamingo	Cincinnati-Jacksonville	1	0
Penna.—L. & N.—C. of G.—A. C. L.—F. E. C.	Southland (East Coast)	Chicago-Miami	2	5
Penna.—L. & N.—C. of G.—A. C. L.	Southland (West Coast)	Chicago-St. Petersburg	1	5
M-K-T	Katy Limited	Kansas City-San Antonio	6	20
M-K-T	Katy Flyer	Kansas City-San Antonio	2	20
M-K-T	Bluebonnet	Kansas City-Dallas	4	40
M. P.	Southern Scenic	Kansas City-Memphis	1	55
M. P.—T. & P.	Sunshine Special	St. Louis-Ft. Worth	1	40
M. P.—T. & P.—I. G. N.	Sunshine Special	St. Louis-San Antonio	1	5
M. P.—T. & P.—I. G. N.	Sunshine Special	St. Louis-Houston	1	0
M. P.	Louisiana Sunshine Special	St. Louis-Lake Charles	1	55
M. P.—T. & P.	The Texan	St. Louis-Ft. Worth	3	15
M. P.—T. & P.—I. G. N.	The Texan	St. Louis-Houston	1	10
M. P.—T. & P.	Southerner	St. Louis-El Paso	4	10
N. C. & St. L.	No. 2-102	Nashville-Memphis	1	25
N. Y. C.	Twentieth Century Limited	New York-Chicago	1	0
N. Y. C.	Pacemaker	New York-Chicago	1	0
N. Y. C.	Advance Commodore Vanderbilt	New York-Chicago	1	0
N. Y. C.	Commodore Vanderbilt	New York-Chicago	1	0
N. Y. C.	Lake Shore Limited	New York-Chicago	3	10
N. Y. C.	Fifth Avenue Special	New York-Chicago	1	15
N. Y. C.	Water Level Limited	New York-Chicago	1	10
N. Y. C.	Iroquois	New York-Chicago	1	10
N. Y. C.	Wolverine	New York-Chicago	1	10
N. Y. C.	New England Wolverine	Boston-Chicago	1	40
N. Y. C.	Knickerbocker	New York-St. Louis	1	55
N. Y. C.	Advance Knickerbocker	Boston-St. Louis	1	0
N. Y. C.	Southwestern Limited	New York-St. Louis	1	0
N. Y. C.	Missourian	St. Louis-New York	2	0
N. & W.	Pocahontas	Norfolk-Cincinnati	1	15
Penna.	Broadway Limited	New York-Chicago	1	0
Penna.	Golden Arrow (1st section)	New York-Chicago	1	0
Penna.	General	New York-Chicago	1	0
Penna.	Trail Blazer	New York-Chicago	1	0
Penna.	Admiral	New York-Chicago	1	0
Penna.	Pennsylvanian	New York-Chicago	1	0
Penna.	Rainbow	New York-Chicago	1	10
Penna.	The American	New York-St. Louis	1	5
Penna.	Gotham Limited-Valley Special	Chicago-Pittsburgh	1	5
Penna.	Kentuckian	Chicago-Louisville	1	5
St. L.—S. F.	Meteor	St. Louis-Oklahoma City	1	45
St. L.—S. F.	Twin Meteor	St. Louis-Paris	1	50
St. L.—S. F.	Will Rogers	St. Louis-Oklahoma City	2	10
St. L.—S. F.	Black Gold	Tulsa-Dallas	3	0
St. L.—S. F.—M-K-T	Texas Special	St. Louis-San Antonio	1	35
St. L.—S. F.—M-K-T	Bluebonnet	St. Louis-Dallas	2	15
St. L.—S. F.—Sou.	Kansas City-Florida Special	Kansas City-Jacksonville	3	5
Penna.—R. F. & P.—S. A. L.	Silver Meteor	New York-Miami	1	0
Penna.—R. F. & P.—S. A. L.	Palmland	New York-Miami	1	0
Penna.—Sou.—A. W. P.—W. of A.—L. & N.	Crescent	New York-New Orleans	1	50
Penna.—Sou.—A. W. P.—W. of A.—L. & N.	Piedmont Limited (Pullman section)	New York-New Orleans	2	45
Sou.—A. W. P.—W. of A.—L. & N.	No. 35	Washington-New Orleans	2	30
Sou.	Queen and Crescent	Cincinnati-New Orleans	1	15
N. Y. C.—Sou.	Royal Palm	Chicago-Jacksonville	1	20
N. Y. C.—Sou.	Ponce De Leon	Cleveland-Jacksonville	1	0
Sou.—N. & W.—Sou.	Birmingham Special	Washington-Memphis	1	35
Rut.—B. & M.—N. Y. C.—C. N. R.	Mt. Royal	New York-Montreal	1	10
Sou.—N. & W.—Sou.	New York, Chattanooga & New Orleans Limited	Washington-New Orleans	1	0
S. P.	Sunset Limited	New Orleans-Los Angeles	11	5
S. P.	Argonaut	New Orleans-Los Angeles	4	35
S. P.	Cascade	Portland-San Francisco	3	0
S. P.	Oregonian	Portland-San Francisco	3	0
S. P.	Klamath	Portland-San Francisco	2	45
S. P.	San Joaquin Daylight	Los Angeles-San Francisco	2	10
S. P.	Coaster	Los Angeles-San Francisco	1	25
S. P.	Owl	Los Angeles-San Francisco	1	55
S. P.	West Coast	Portland-Los Angeles	4	25
S. P.	Alamo	Houston-San Antonio	1	0
T. & P.	Louisiana Limited-Sunshine Special	New Orleans-El Paso	1	40
T. & P.	Texas-Colorado Limited	New Orleans-Ft. Worth	3	15
T. & P.	No. 31	Texarkana-Ft. Worth	1	55
U. P.	Pony Express	Denver-Salt Lake City	2	30
U. P.	Butte Special	Salt Lake City-Butte	1	30
U. P.	Northwest Special	Salt Lake City-Idaho Falls	1	5
U. P.	The Spokane	Portland-Spokane	1	15
U. P.	Idahoan	Denver-Portland	2	55
Wabash	Kansas City Exp.	St. Louis-Kansas City	1	50

* Where the time saved eastbound and westbound is not the same, the maximum saving is given.

cago, the big selling point being the convenience of remaining in the same car without transfer of baggage between Eastern and Pacific Coast destinations.

At the moment the railways are studying the operation of through transcontinental trains. It is possible that such trains may be routed so as to avoid the congested Chicago terminals, in which event the factor of shorter schedules would be added to the attraction of such service, in addition to the present advantage of greater comfort in avoiding the crosstown transfer in Chicago.

Following the inauguration of the transcontinental service, as a logical corollary, a large number of through sleeping car routes were established between New York-Washington and cities of the Southwest, including two cars which go through from New York to Mexico City. For a number of years certain of the Chicago-St. Louis lines have operated through sleepers via St. Louis and other gateways to southwestern points, but these new sleeping car routes, shown in Table II, represent the first time that passengers have had the opportunity of enjoying through service from New York and Washington to these points. As a matter of fact, one through train is operated in this service. This train carries through sleeping cars from New York and Washington over the Pennsylvania to St. Louis, and the Missouri Pacific beyond. Its success is perhaps indicative of what may be expected in the way of passenger response to through transcontinental trains when such trains are established.

Valuable experience in the establishment of through sleeping car service and through trains has been gained by means of the operation of these through cars and the one through train. Such information will be used to good advantage in the near future when the plans for through transcontinental service have been completed.

Schedule Improvements

One of the most striking developments since V-J day has been the improvement in the schedules of existing trains. No part of the country has a monopoly on such improvements. They have been widespread and reach every section. All of the principal passenger services have been materially improved so far as running time is concerned. Table III gives a list of the more important of such improvements. Space limitations make it necessary to confine this listing to those trains whose schedules have been shortened one hour or more, but even so, the list is impressive and shows clearly the passenger progress that has been made by the railways in spite of all handicaps.

This list does not show the new trains which have been established on

fast schedules, nor does it show the plans for new streamlined service which are detailed elsewhere in this issue. Nonetheless, it indicates a reconversion to peace-time standards and an improvement in service to the customers that probably cannot be matched in any industry. The story of what the railways have done already shows clearly the trend to startling improvements in passenger service that will follow with more normal conditions.

Vacation Travel

The summer of 1946 witnessed a scramble for accommodations such as the railways, hotels and other industries serving the traveling public had never seen before. In previous Passenger Progress issues we have predicted that the cessation of the war would witness a travel market of unprecedented size, and our predictions were quite correct. In the summer of 1946 trains to vacation spots in many instances were sold out months in advance.

Even though there were more than 35 new trains operating between cities 300 or more miles distant from each other, the demand for accommodations exceeded the supply on a large number of trains. Vacation travel during the past summer was greater than in any previous vacation season. This is attested to by the fact that hotels, tourist courts and all agencies catering to vacation travel were booked up solidly for weeks and sometimes months in advance.

The railways got more than their proportionate share of this travel because of the lag in the delivery of new private automobiles. On the other hand, this factor was offset to a large extent by the number of people who were discouraged from traveling by reports of lack of accommodations. Barring some national economic calamity, vacation travel next summer is expected to equal or exceed that of 1946.

Winter Resort Travel

Predictions as to winter resort travel on the part of railway passenger traffic managers best informed on this subject are most optimistic. In preparation for such travel, the lines to the Southwest and to Pacific Coast points already have several new trains in operation. The New York-Florida lines, the Chicago-Florida lines, and the Cincinnati-Florida lines all have announced that, early in December, train service to Florida vacation spots will be restored to the pre-war basis or better. Numerous trains formerly operated in the winter season only and abandoned entirely during the war to conserve equipment for more essential purposes have been re-established and will begin operation early in December and continue through the winter vacation season.

Vacation tours, completely dormant during the war, sprang into renewed life last summer. The demand for such tours was so great as to indicate that next summer will witness an all-time record high.

Railway passenger progress is on the march again, and despite many handicaps the railways are rapidly improving their service. What has been done in the past year represents a remarkable achievement, but the year 1947 will witness improvements that will amount to almost a complete revolution in railway passenger service. It is essential that the railways continue with these plans if they are to meet the ever-increasing competition which they are facing.

Crowded diners are still the rule rather than the exception, but dining car service is steadily being improved from its war-time low

Pullman Litigation

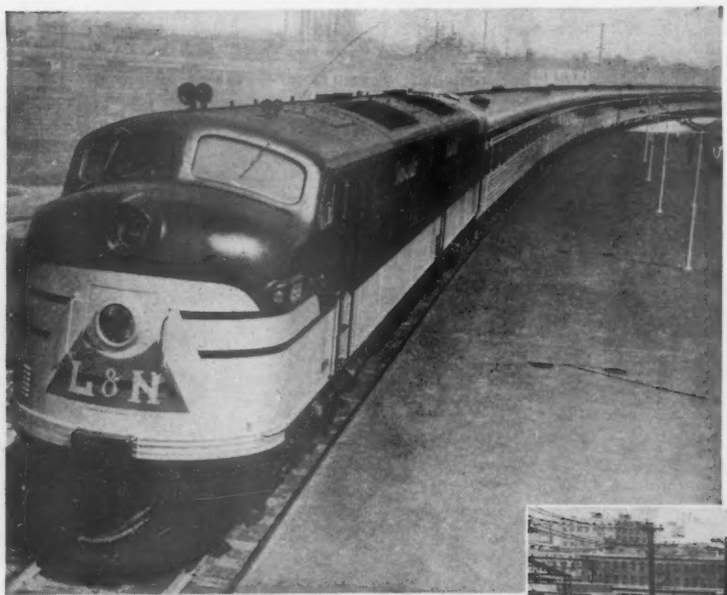
Another cause of some uncertainty in planning improvements and extensions of passenger service has been the litigation over the disposal of the Pullman Company to the principal railroads under the terms of the January 4 order of the special court which ruled that Pullman, Inc., could not legally continue to control both its manufacturing and its operating subsidiaries.

While the three-judge federal court approved the sale of the Pullman Company to the group of railroads rather than to any of the other bidders—the Standard Steel Spring Company; an investment group represented by Glore, Forgan & Company; and Otis & Company and Robert R. Young, chairman of the Chesapeake & Ohio—the Department of Justice, which had pressed the anti-trust law proceedings under which the special court's decision was reached, took the position that control of the Pullman Company by a group of railroads would amount to a perpetuation of the alleged monopoly in that field of transportation. The department therefore appealed the case to the Supreme Court, where it has been docketed for review during the current term.

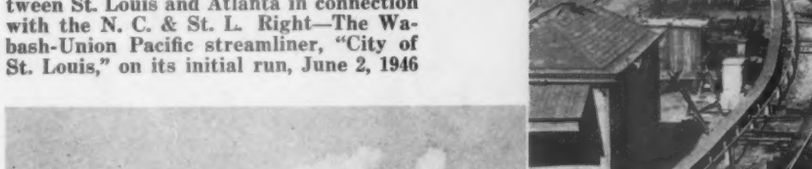
Pending a decision in this appeal the lower court has permitted the existing Pullman Company to continue to operate its equipment as in the past. As another article in this issue indicates, a number of individual railroads have placed orders for new sleeping cars. Ownership of other cars of modern design assigned to specific runs is to be acquired by some of the individual roads under the terms of the joint offer accepted by Pullman, Inc., leaving the Pullman Company in control of the large pool of older, so-called standard cars upon which it is expected all roads participating in Pullman ownership will be able to draw to supplement their individually-owned equipment.

The Streamliner

Labor difficulties and material shortages delay but do not halt the building of new trains

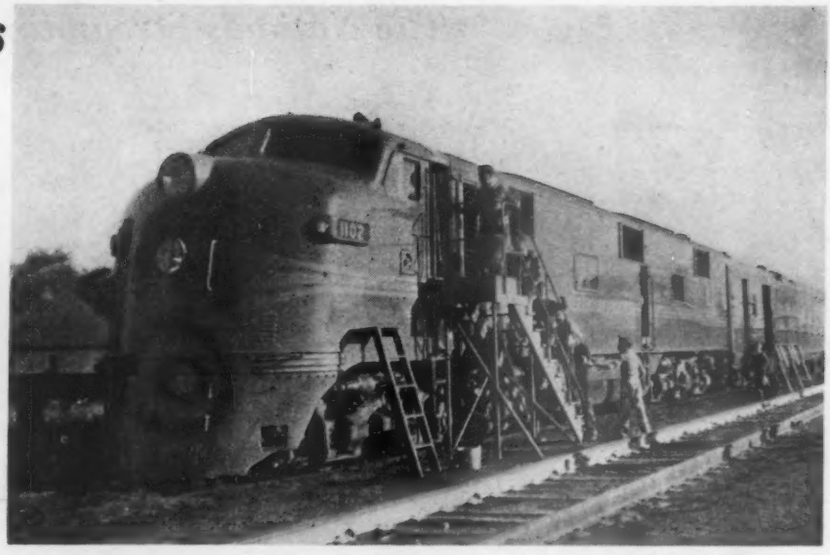


Above—On November 17 the Louisville & Nashville places its two "Humming Birds" in service between Cincinnati and New Orleans. On the same date the "Georgians," trains similar in consist and appearance, are going into service between St. Louis and Atlanta in connection with the N. C. & St. L. Right—The Wabash-Union Pacific streamliner, "City of St. Louis," on its initial run, June 2, 1946



Left—The "Powhatan Arrow" operates on a fast schedule between Cincinnati, Ohio, and Norfolk, Virginia. Below—The new "Pere Marquettes," the first trains consisting entirely of postwar equipment

Fleet Increases



Servicing the new streamliner "Meadowlark" of the Chicago & Eastern Illinois prior to one of its runs between Chicago and Cypress, Ill.

THE list of streamlined trains, which remained practically static during the war, already exhibits renewed virility. The accompanying table does not show as many changes as were hoped for or expected, but that is not the fault of the railways or the car builders. Immediately after V-E day, and even before V-J day, various railways began placing orders for passenger cars, although until after hostilities ended these were "phantom" orders in that the manufacturers were prohibited by the government from building passenger cars. However, immediately after V-J day, another flood of orders for passenger cars was placed by the railways with the car builders.

When the preceding Passenger Progress issue was published on November 17, 1945, it was confidently expected there would be 50 or more new streamlined trains in operation by the time this 1946 issue appeared. Shortages of material, together with recurrent strikes among the companies supplying specialties for passenger cars, have held down the number of new streamlined trains actually delivered to much below this figure, but the next six months will see a large fleet of them put in service.

Elsewhere in this issue is an article listing the number and types of passenger cars on order and describing the new streamlined trains that will be placed in operation when such cars are delivered. The changes that have occurred in the list of streamliners include a few new trains. The most important changes, however, have been the restoration of a completely streamlined consist where it had been necessary to run all sorts of miscellaneous equipment in some of these trains during the war. In addition, peace-time schedules have been restored on nearly all of these trains, involving reductions in running time of as much as two hours in some instances. Already the various transcontinental streamliners have been put on more frequent schedules, such as every other day instead of every three days and, in general, as close an approach to peace-time schedules and service as possible has been worked out.

Only two new streamlined trains (four sets of equipment) were installed during the war. The equipment for these trains had been practically completed before the beginning of the war, but the installation was held up. The "Panama Limiteds" of the Illinois Central went into service May 3, 1942, and the "Colorado Eagles" of the Missouri Pacific-Denver & Rio Grande Western were inaugurated on June 21, 1942. During the war the Rock Island managed to rearrange its equipment so as to procure necessary sets for three "Twin Star Rockets," operating between Minneapolis, Minn., and Houston, Tex., which were inaugurated on January 14, 1945.

New Trains Installed

On April 28, 1946, the Norfolk & Western gathered together enough streamlined equipment, built immediately before the war, to establish the "Powhattan Arrows," two seven-car coach trains operating between Cincinnati, Ohio, and Norfolk, Va. On May 29, 1946, the Burlington re-established its "General Pershing Zephyr," operating between St. Louis, Mo., and Kansas City, using pre-war equipment for this operation.

On June 2, 1946, the Southern Pacific, in the rearrangement of its streamlined trains, some of which had been consolidated during the war, was able to supply enough equipment for the new "Sacramento Daylights" operating between Sacramento, Cal., and Lathrop, the cars going through to Los Angeles from that point after being consolidated with the "San Joaquin Daylights." On the same date, the Morning and Noon "Daylights," consolidated during the war, were re-established as separate trains. Also on June 2, the Union Pacific was able to rearrange its fleet of streamlined cars to supply equipment for a new streamlined train, the "City of St. Louis," operating between St. Louis and Cheyenne, Wyo., via the Wabash between St. Louis and Kansas City. These trains carry through coaches and sleepers from St. Louis to Los Angeles, San Francisco and Portland, Ore., such through cars being switched to other fast Union Pacific trains at Cheyenne.

The first new streamliners to consist entirely of equipment built since the war were two six-car trains inaugurated on August 10, 1946, in coach service on the Pere Marquette between Grand Rapids, Mich., and Detroit. These trains, known as the "Pere Marquettes," were described in *Railway Age* of September 7, page 396. On October 6, 1946, another streamliner, the "Meadowlark," consisting of new equipment delivered since the war, was inaugurated by the Chicago & Eastern Illinois for operation between Chicago and Cypress, Ill.

The C. & E. I. also began operation of another streamlined train, the "Whippoorwill," supplying coach service between Chicago and Evansville, Ind., the first revenue run of which was made on November 10, 1946. The Louisville & Nashville, on November 17, 1946, is inaugurating two streamlined coach trains, the "Humming Birds," between Cincinnati and New Orleans. On the same date the L. & N., in connection with the Nashville, Chattanooga & St. Louis, begins running the two "Georgians," to supply daylight coach service in each direction between St. Louis and Atlanta.

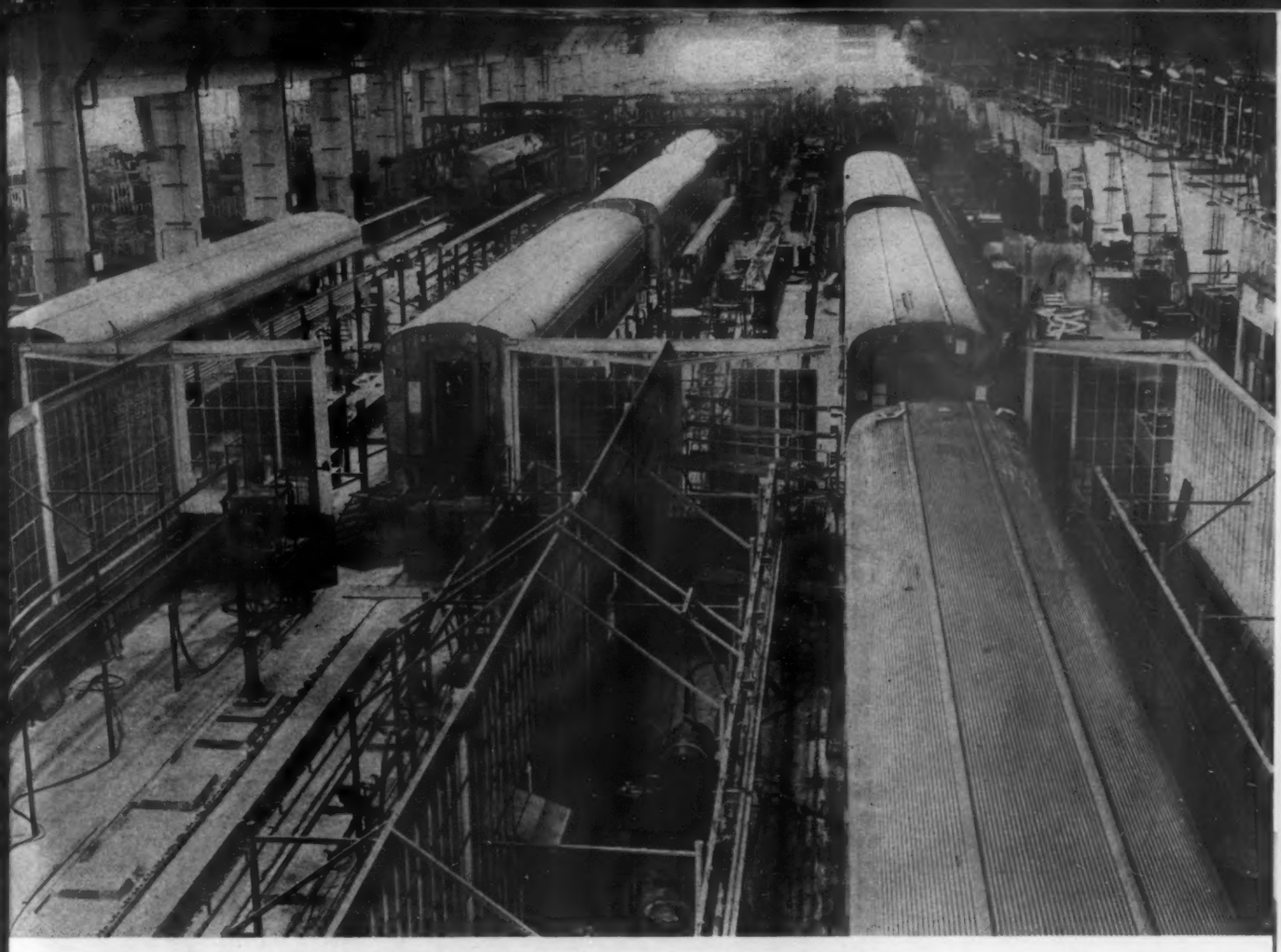
This fall, the Illinois Central removed the four-car "Green Diamond" from service between Chicago and St. Louis. This train was placed in operation on May 17, 1936. Sets of equipment are on order for two new "Green Diamonds," but until they are delivered the service will be run by a conventional train with Diesel-electric power.

A list of the streamliners appears on the following page.

The Nation's Streamliners

Railway	No. of Trains	Name of Train	Normal Consist	Placed in Service	Operated Between	Consist C–Coaches P–Parlor Cars S–Sleepers
Alton	1	Abraham Lincoln	12	7-1-35	Chicago-St. Louis	C-P
	1	Ann Rutledge	12	7-26-37	Chicago-St. Louis	C-P
A. T. & S. F.	2	Super Chief	12	2-22-38 (a)	Chicago-Los Angeles (b)	S
	6	Chief	13	2-22-38 (a)	Chicago-Los Angeles	S
	2	Kansas Cityan	14	4-17-38	Chicago-Oklahoma City	C-P
	1	Tulsan	6	12-10-39	Kansas City-Tulsa	C-P
	2	Golden Gate	7	7-1-38	Oakland-Bakersfield	C
	2	San Diegan	13	3-27-38	Los Angelesz-San Diego	C-P
	2	El Capitan	12	2-22-38	Chicago-Los Angeles (b)	C
B. & M.	1	Cheshire	3	4-1-35	Boston-White River Jct.	C-P
C. & E. I.	1	Meadowlark	4	10-6-46	Chicago-Cypress	C
	1	Whippoorwill	7	11-10-46	Chicago-Evansville	C-P
C. & N. W.	2	Twin Cities 400	13	9-24-39 (a)	Chicago-Minneapolis	C-P
	1	Minneesota 400	5	1-8-42 (a)	Wyeville-Mankato	C-P
	1	Peninsula 400	13	1-8-42	Chicago-Ishpeming	C-P
	1	Shoreland 400	7	1-8-42	Chicago-Green Bay	C-P
	1	Capitol 400	7	1-8-42	Chicago-Milwaukee-Madison	C-P
C. B. & Q.	1	Pioneer Zephyr	4	11-11-34	Lincoln-McCook	C-P
	1	Mark Twain Zephyr	3	10-28-35	St. Louis-Burlington	C-P
	1	General Pershing Zephyr	5	5-29-46	St. Louis-Kansas City	C-P-S
	2	Denver Zephyr	12	11-8-36	Chicago-Denver	C-S
	2	Twin Zephyr	9	12-18-36	Chicago-Minneapolis	C-P
	1	Silver Streak Zephyr	4	4-15-40	Lincoln-Kansas City	C-P
	1	Ak-Sar-Ben Zephyr	8	12-11-40	Lincoln-Chicago	C-P
	1	Advance Flyer	6	2-2-41	Chicago-Lincoln	C-P
	2	Texas Zephyr	12	6-2-40	Denver-Dallas	C-S
C. M. St. P. & P.	2	Afternoon Hiawatha	12	5-29-35	Chicago-Minneapolis	C-P
	2	Morning Hiawatha	12	1-21-39	Chicago-Minneapolis	C-P
	2	Midwest Hiawatha	10	12-11-40	Chicago-Omaha-Sious Falls	C-P
C. R. I. & P.	2	Rocky Mountain Rocket	10	11-12-39	Chicago-Denver-Colorado Springs	C-S
	1	Peoria Rocket	4	9-19-37	Chicago-Peoria	C-P
	1	Des Moines Rocket	5	9-26-37	Chicago-Des Moines	C-P
	2	Choctaw Rocket	6	11-17-40	Memphis-Amarillo	C-S
	2	Texas Rocket	4	11-15-38	Kansas City-Oklahoma City-Dallas	C-P
G. M. & O.	3	The Rebel	4	7-1-35	New Orleans-St. Louis	C-S
	2	The Rebel	10	10-29-40	St. Louis-Mobile-Montgomery	C-S
I. C.	2	Panama Limited	11	5-3-42	Chicago-New Orleans (a)	S
K. C. S.-L. & A.	3	Southern Belle	9	9-1-40	Kansas City-New Orleans	C-S
M. P.	2	Missouri River Eagle	6	3-10-40	St. Louis-Omaha	C-P
	1	Delta Eagle	2	5-11-41	Memphis-Tallulah	C
N. Y. C.	2	Twentieth Century Limited	17	6-15-38 (a)	New York-Chicago	S
	2	Empire State Express	16	12-7-41	New York-Toledo-Detroit	C-P
N. Y. N. H. & H.	1	Comet	3	6-5-35	Greenbush-Whitman	C
N. & W.	2	Powhattan Arrow	7	4-28-46	Cincinnati-Norfolk	C
Penna.	2	Broadway Limited	15	6-15-38 (a)	Chicago-New York	S
	2	The Pittsburgher	10	9-24-39 (a)	Pittsburgh-New York	P-S
P. M.	2	Pere Marquette	6	8-10-46	Grand Rapids-Detroit	C
Reading	1	Crusader	5	12-13-37	Jersey City-Philadelphia	C-P
S. P.	2	Sunbeam	6	9-19-37	Houston-Dallas	C-P
	2	Hustler	6	9-19-37	Houston-Dallas	C-P
	2	Morning Daylight	18	(f)	San Francisco-Los Angeles	C
	2	Noon Daylight	15	(f)	San Francisco-Los Angeles	C
	2	San Joaquin Daylight	14	7-4-41	Oakland-Los Angeles	C
	2	Sacramento Daylight	5	6-2-46	Sacramento-Lathrop (g)	C
	2	Lark	20	5-1-41 (a)	San Francisco-Los Angeles	S
Jointly Owned or Operated Trains						
B.-R. I.-Ft. W. & D. C.	1	Sam Houston Zephyr	5	10-1-36	Houston-Ft. Worth	C P
C. & E. I.-L. & N.-N. C. & St. L.-A. C. L.-F. E. C.	1	Dixie Flagler	7	12-17-40	Chicago-Miami (c)	C
C. & N. W.-U. P.	1	City of Portland	13	6-6-35	Chicago-Portland (d)	C-S
	2	City of Los Angeles	14	12-27-37	Chicago-Los Angeles (e)	C-S
	2	City of Denver	11	6-18-36	Chicago-Denver	C-S
C. & N. W.-U. P.-S. P.	2	City of San Francisco	15	6-14-36	Chicago-Oakland (e)	C-S
C. B. & Q.-C. R. I. & P.	2	Zephyr Rocket	7	1-7-41	St. Louis-Minneapolis	C-S
C. R. I. & P.-Ft. W. & D. C.-B.-R. I.	3	Twin Star Rocket	7	1-14-45	Minneapolis-Houston	C-S
I. C.-C. of G.-A. C. L.-F. E. C.	1	City of Miami	7	12-18-40	Chicago-Miami (c)	C
M. P.-D. & R. G. W.	2	Colorado Eagle	7	6-21-42	St. Louis-Denver	C-S
N. Y. C.-I. C.	1	James Whitcomb Riley	8	4-28-41	Chicago-Cincinnati	C
Penna.-L. & N.-A. C. L.-F. E. C.	1	South Wind	7	12-19-40	Chicago-Miami (c)	C
Penna.-R. F. & P.-S. A. L.	3	Silver Meteor	17	2-2-39	New York-Miami	C-S
	3	Silver Meteor	12	2-2-39	New York-St. Petersburg	C-S
Penna.-Southern	3	Southerner	8	3-31-41	New York-New Orleans	C
Penna.-R. F. & P.-A. C. L.-F. E. C.	3	Champion	14	12-1-39	New York-Miami	C
Sou.-N. & W.	3	Tennessean	9	5-17-41	Washington-Memphis	C-S
Wabash-U. P.	2	City of St. Louis	12	6-2-46	St. Louis-Cheyenne (h)	C-S

(a) Date lightweight equipment was installed instead of standard weight on existing trains.
(b) Effective September 29, 1946, this train was placed on an every-other-day basis instead of the previous twice-a-week schedule.
(c) The Dixie Flagler, the City of Miami and the South Wind supply daily service between Chicago and Miami, each train leaving each terminus every third day.
(d) Schedules increased from five sailings per month from each terminal to six sailings, effective September 3, 1936.
(e) Placed on every-other-day schedule on September 3, 1946, instead of every third day as previously.
(f) The Morning and Noon Daylights, operated as separate trains before the war, were consolidated for war-time operation. They were re-established as separate trains on April 14, 1946.
(g) The Sacramento Daylight is consolidated with the San Joaquin Daylight between Lathrop and Los Angeles to provide through streamliner service Sacramento-Los Angeles.
(h) This train is divided at Cheyenne, with through coaches and sleepers going to Los Angeles, San Francisco and Portland.



Assembly line production of modern passenger cars

Passenger-Train Cars on Order Total 2,598

Many new trains to be put into service—Schedules to be faster and cars will provide novel features for passengers' comfort

FORTY-SIX railroads in the United States have 2,598 new passenger-train cars on order and undelivered. Of the total, 2,406 have been ordered from contract builders and 192 from railroad company shops. The cars currently on order and undelivered are listed in detail in a table accompanying this article. A description of certain features of the new cars, and of many of the trains in which this equipment will be used, follows.

The 74 cars ordered by the **Atlantic Coast Line** are part of a joint order for 117 cars placed by Coast Line in conjunction with the Pennsylvania, the Richmond, Fredericksburg & Potomac and the Florida East Coast. All the equipment will be used on the New York-Florida runs operated by the four railroads and, south of Richmond, Va., all the trains will be Diesel-powered. A number of the sleeping cars are scheduled for use in an all-sleeping-car-train to be operated between New York and Miami, Fla. The coaches on order are to be suitable for use in combination coach and sleeping car trains or in all-coach streamliners, and the bar-lounge cars, to be operated adjacent to the diners, will supplement the dining car service.

Equipped with mechanical air-conditioning devices, the cars will utilize the HSC braking system operating in conjunction with automatic wheel slide control, which will allow faster schedules with greater safety.

All the cars ordered by the **Baltimore & Ohio,** with the exception of the eight 14 roomette-4 double bedroom sleeping cars, will be used to make up two as yet unnamed all-coach streamlined trains, which will be assigned to daylight service between Baltimore, Md.-Washington, D. C., and Chicago. Diesel-electric motive power will be provided for these trains. The sleeping cars will be assigned to the all-Pullman "Capitol Limited" operating between Washington and Chicago.

Each of the buffet-lounge cars for the new trains will contain a baggage section equipped with racks, dormitory quarters for the dining car crew (including a bedroom for the steward), a conductor's office, a buffet for light meal and refreshment service, dining tables and lounge chairs. The coaches will

Above — Motive power for the Great Northern's "Empire Builder." Right—The Illinois Central's "Panama Limited"

have large dressing rooms, each with two toilets, at each end of the car for men and women. The coach dome observation cars will have reclining seats in both the standard and upper levels. Lounge and dressing rooms, with toilet annexes, will be located on the lower level under the dome. Two- and four-seat tables, with the latter set at an angle, will be placed in the dining cars. The roomettes in the sleeping cars will be suitable for one person traveling alone, while the bedrooms, each with a private toilet annex, will accommodate two persons or may be sold *en suite* for parties of three or four persons. Communication between the two rooms will be made possible by a collapsible partition and an arrangement whereby half the bedrooms will have berths crosswise to the car and the remainder will have berths lengthwise to the car.

The **Boston & Maine** and the **Maine Central** jointly have ordered 24 cars which will be used to equip three through trains (the "Pine Tree," the "Flying Yankee" and the "Kennebec") between Boston, Mass., and Bangor, Me. They will be all-coach trains, except that in the restaurant-lounge cars the lounge seats will be sold as parlor car seats at regular parlor car rates. Parlor car fare will be charged in the parlor-lounge seats. In periods of peak traffic, the conventional type of air-conditioned coach now in use will be added to the trains.

Twenty-two of the 46 cars on order for the **Chesapeake & Ohio** will be used to establish streamlined day trains between Cincinnati, Ohio, and Washington, D. C., and the balance of the cars will be assigned to complementary service between Charlottesville, Va., and Richmond, and between Ashland, Ky., and central Kentucky. Power for the main-line trains will be supplied by Baldwin-Westinghouse steam turbine electric locomotives. The trains, which are to be air-conditioned, will embody the following features: A motion picture theater, art and industrial exhibits and news ticker and library service. One coach will be devoted to family travel. A matron, a passenger representative and porters will be assigned to each train. In addition to the cars on order, the C. & O. and its affiliated lines recently asked for bids on 247 lightweight passenger cars, including 112 sleeping cars, to replace standard equipment on all its principal mainline trains, as reported in the *Railway Age* for October 12, page 618.

The **Chicago, Burlington & Quincy** has 68 new cars on order, 5 mail and baggage cars of which will be used on existing trains. Twelve of the cars will go into a new "Empire Builder," the Burlington's portion of five 12-car trains in the daily Chicago-Pacific northwest service operated with the Great Northern. Seven of the cars will make up each of two new "Twin Cities Zephyrs," making daily round trips between Chicago and St. Paul-Minneapolis. Another new train, consisting of 12 cars, will go into the Chicago and Pacific northwest run operated with the Northern Pacific. The Burlington's portion of the six trains required for daily service between Chicago and San Francisco, Calif., via the Denver & Rio Grande Western and the Western Pacific, will make two 10-car trains, plus five additional cars. All the new passenger equipment, the approximate cost of which will be $8,120,000, will be Diesel-powered.

The 73 cars on order for the **Chicago & North Western** will cost about $6,777,000. When placed in service, the new streamlined cars will be pulled by streamlined Diesel-electric locomotives. The seven sleeping cars ordered from the Pullman-Standard Car Manufacturing Company, plus the 5 ordered from the same builder by the Chicago, St. Paul, Minneapolis & St. Louis (to cost the latter road about $580,000), will be used to replace the present standard sleeping cars on the "North Western Limited" operating overnight on a daily schedule between Chicago and the Twin Cities. The 27 coaches, 9 parlor cars,

Passenger-Train Cars Ordered, 1920-1945

Year	Railroad Shops	Contract Builders	Pullman Company	Express Refrigerator & Milk	Total
1945	90	2,882	0	25	2,997
1944	10	715	0	0	725
1943	15	1,670	0	0	1,685
1942	0	34	0	0	34
1941	31	321	197	0	549
1940	6	320	53	0	379
1939	0	196	125	0	321
1938	82	112	84	0	278
1937	40	246	171	110	567
1936	50	400	1	0	451
1935	6	62	10	55	133
1934	95	326	8	0	429
1933	2	14	3	0	19
1932	5	37	0	2	44
1931	5	31	1	0	37
1930	41	507	102	50	700
1929	84	1,244	550	505	2,383
1928	133	1,086	244	930	2,393
1927	86	1,444	118	45	1,693
1926	62	1,394	519	85	2,060
1925	44	1,661	479	90	2,274
1924	49	1,653	701	372	2,775
1923	30	1,105	424	673	2,232
1922	37	1,902	300	245	2,484
1921	1	136	100	50	287
1920	33	1,060	458	40	1,591

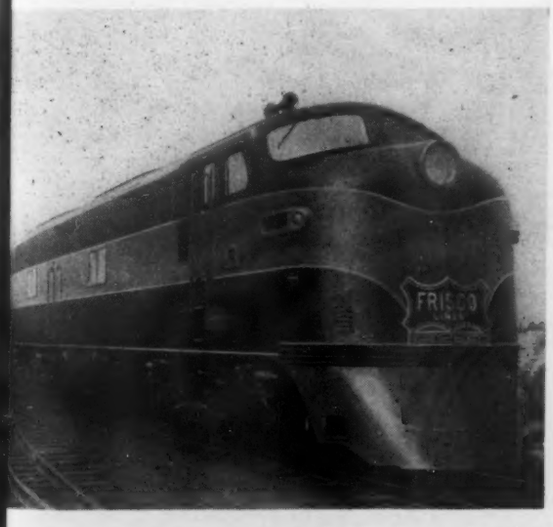
Source: American Railway Car Institute

4 mail-baggage cars, 1 dining car, 1 cafe coach and 4 tap-dining-lounge cars, all ordered from Pullman-Standard, will be used to expand the present "400" streamliner service. This service will consist of a daily eastbound and westbound streamliner between Chicago and Omaha, Neb., with a connecting streamliner to and from Sioux City, Iowa; a year-round daytime streamliner between Chicago and Ashland, Wis., and Watersmeet, Mich., serving much of the Wisconsin north woods region on a faster schedule than the present "Flambeau," which it will replace; and streamliner service between Chicago and Mankato, Minn., via Rochester. These new trains will furnish fast, daytime service similar to that offered by trains in the present "400" fleet. The 20 cars on order with the American Car & Foundry Co. will supplement the equipment now in service on the western streamliners operating jointly with the Union Pacific between Chicago and Denver, Colo.

The 7 lightweight, air-conditioned sleeping cars ordered by the **Erie** will be used in the New York-Chicago service offered by the "Erie Limited" and the "Lake Cities Express." Fifteen coaches and seven dining cars are being completely remodeled for use on the same trains, which will be hauled by seven 3-unit 4,500-hp. Diesel-electric locomotives on order with the Electro-Motive division of the General Motors Corporation, delivery of which is expected some time during the first half of 1947.

Twenty of the 28 new cars ordered by the **Florida East Coast** will be used in joint operation between New York and Florida with the Pennsylvania, the Atlantic Coast Line and the Richmond, Fredericksburg & Potomac. Twelve sleeping cars, 2 dining cars and 1 baggage car are intended for operation on the "Florida Special," although the 5 coaches have not been assigned to any definite service. This equipment will cost an estimated $2,000,000. Eight cars, costing about $1,000,000, will be the road's quota in the joint operation of the "Royal Palm" between Detroit, Mich., Cleveland, Ohio, and Miami, via the New York Central system and the Southern.

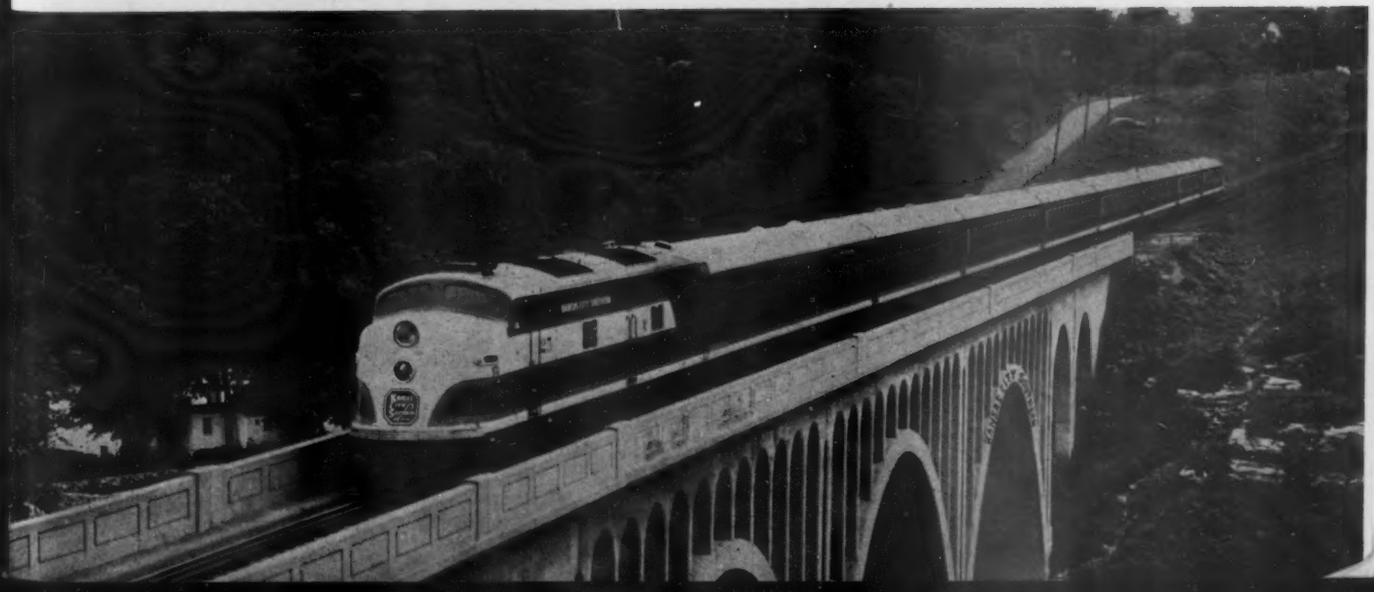
Forty-eight of the cars ordered by the **Great Northern** will go equally into four streamlined "Empire Builder" trains operating between Chicago and the Pacific northwest and will cost about $4,000,000. December, 1946, is the expected delivery date of these trains, each of which will consist of three 48-passenger coaches, one 60-passenger coach, one coffee-shop-lounge-dormitory car, one dining car, three sleeping cars, one bedroom-lounge car and one mail-baggage car. The trains will have Diesel-electric motive power and operate on a 45-hour schedule between Seattle, Wash., and Chicago. Present running time of the "Empire Builder" is 58 hours, 35 minutes, from Chicago and 56 hours, 10 minutes, for the eastward trip. Two new 5-car streamliners to operate between Seattle and Vancouver, B. C., and another to go into service between St. Paul-Minneapolis and Grand Forks, N. D., have been ordered. The Seattle-Vancouver trains will be known as the "Morning Puget Sounder" and the



Left — The 4,000-hp. Diesel - electric locomotive which will pull the Frisco's "Meteor" and the new "Texas Special"

Right — The B. & M.'s "Pine Tree" en route from Portland to Boston

Below — The K.C.S. "Southern Belle"



Passenger Cars on Order for Domestic Service, November 1, 1946

Railroad	Number	Type	Seating Capacity	Date of Delivery	Builder
Alton	15	Coach	..	.....	Amer. Car & Fdy.
Atchison, Topeka & Santa Fe	16	Lunch Counter-Din.	..	.....	Budd
	25	Mail	..	.....	Amer. Car & Fdy.
	51	Sleeping	..	Begins Jan., '47	Pullman-Standard
	58	Coach	..	Begins Dec., '46	Pullman-Standard
	3	Baggage	..	Begins Dec., '46	Pullman-Standard
	3	Parlor	..	Begins Dec., '46	Pullman-Standard
Atlanta & West Point	3	Coach	..	.....	Budd
	1	Dining	..	.....	Budd
	1	Mail-Bag	..	.....	Pullman-Standard
	2	6 bedroom-10 roomette	..	.....	Pullman-Standard
	1	Observ.-Bedroom	..	.....	Pullman-Standard
Atlantic Coast Line	25AC	6 bedroom-10 roomette	22	Fall, '47	Pullman-Standard
	5AC	21 roomette	21	Fall, '47	Pullman-Standard
	6AC	Double Bedroom-Bar-Lnge.	24 Lnge. 12 Bed.	2nd qtr., '47	Amer. Car & Fdy.
	6AC	2 double room-14 roomette	20	2nd qtr., '47	Amer. Car & Fdy.
	10AC	Dining	36	Fall, '47	Pullman-Standard
	20AC	Coach	54	Fall, '47	Pullman-Standard
	2AC	Baggage	..	2nd qtr., '47	Amer. Car & Fdy.
Baltimore & Ohio	8AC	14 roomette-4 double bedroom	..	2nd qtr., '47	Pullman-Standard
	2AC	Buffet-Lnge.	32	2nd qtr., '47	Pullman-Standard
	8AC	Coach	56	2nd qtr., '47	Pullamn-Standard
	2AC	Coach-Dome Observ.	66	2nd qtr., '47	Pullman-Standard
	2AC	Dining	38	2nd qtr., '47	Pullman-Standard
	2AC	Observation	41	2nd qtr., '47	Pullman-Standard
Boston & Maine*	16AC	Coach	66	1947	Pullman-Standard
	4AC	Restaurant-Lnge.	..	1947	Pullman-Standard
	4AC	Combine	46	1947	Pullman-Standard
Central of Georgia	8	.....	..	.....	Amer. Car & Fdy.
	2	Coach-Comb.	..	.....	Amer. Car & Fdy.
	2	Coach	..	.....	Budd
	1	Coach-Comb.	..	.....	Budd
	1	Dining	..	.....	Budd
Chesapeake & Ohio	22AC	Coach-Lnge.	44	Starting first quarter of 1947	Budd
	3AC	Kitchen-Crew Counter-Lnge.	13		Budd
	3AC	Dining	52		Budd
	3AC	Tavern Lnge. Counter	51		Budd
	3AC	Family Coach	32		Budd
	3AC	Room Dome	35		Budd
	3AC	Dome-Observ.	60		Budd
	3AC	Coach-Bag.	28		Budd
	3AC	Kitch.-Din.-Lnge.-Observ.	45		Budd
Chicago, Burlington & Quincy	1	Baggage	..	1947	Pullman-Standard
	1	Mail.-Dorm.	..	1947	Pullman-Standard
	3AC	Coach	56	1946-47	Pullman-Standard
	1AC	Coach	60	1946	Pullman-Standard
	3AC	Coach	48	1946	Pullman-Standard
	1AC	Buff.-Lnge.-Coach	47	1947	Pullman-Standard
	1AC	Din.-Lunch	40	1947	Pullman-Standard
	4AC	Sleeping	..	1947	Pullman-Standard
	4AC	Sleeping	24	1946	Pullman-Standard
	1AC	Buffl-Lnge.-Sleep.	..	1947	Pullman-Standard
	1AC	Sleep.-Obs.	35	1946	Pullman-Standard
	1	Mail-Bag.	..	1946	Pullman-Standard
	1	Coffee Shop-Lnge.-Dorm.	20	1946	Pullman-Standard
	1	Dining	48	1946	Pullman-Standard
	6	Baggage	..	1947	Budd
	2	Mail-Bag	..	1947	Budd
	7AC	Vista Dome-Chair	70	1947	Budd
	2AC	Vista Dome Coach	74	1947	Budd
	6AC	Vista Dome Coach	78	1947	Budd
	3AC	Vista Dome-Coffee Shop-Dorm.	50	1947	Budd
	2AC	Vista Dome-Parlor-Lnge.	60	1947	Budd
	2AC	Tourist Sleep.	32	1947	Budd
	5AC	Dining	48	1947	Budd
	4AC	Sleeping	22	1947	Budd
	3AC	Buff.-Lnge.-Sleep.	46	1947	Budd
	2AC	Club Lnge.-Bag.	39	1947	Budd
Chicago Great Western	3	Bag.-Exp.	..	Nov., '46	Pullman-Standard
Chicago, Milwaukee, St. Paul & Pacific	28	Sleeping	..	June, '47	Pullman-Standard
	24	Coach	..	.....	Company Shops
	6	Coach-Comb.	..	.....	Company Shops
	6	Club-Parlor-Lnge.-Observ.	..	.....	Company Shops
	6	Dining	..	.....	Company Shops
	6	Mail	..	.....	Company Shops
	14	Various	..	.....	Company Shops
Chicago, Rock Island & Pacific	9AC	Sleeping	..	Early 1947	Pullman-Standard
Chicago, St. Paul, Minneapolis & Omaha	5AC	16 duplex roomette-3 bedroom-1 compart.	..	Feb., '47	Pullman-Standard
Chicago & Eastern Illinois	5	Coach	..	.....	Pullman-Standard
	1	Coach-Comb.	..	.....	Pullman-Standard
	1	Dining	..	.....	Pullman-Standard
Chicago & North Western	7AC	16 duplex roomette-3 bedroom-1 compart.	..	Feb., '47	Pullman-Standard
	3AC	Bag.-Dorm.	28	2nd qtr., '47	Amer. Car & Fdy.
	2AC	Lunch Cntr.-Din.	41	2nd qtr., '47	Amer. Car & Fdy.
	4AC	Dining	48	2nd qtr., '47	Amer. Car & Fdy.
	1AC	Cafe-Lnge.	52	2nd qtr., '47	Amer. Car & Fdy.
	3AC	Club lounge	37	2nd qtr., '47	Amer. Car & Fdy.
	1	Mail-Bag	..	2nd qtr., '47	Amer. Car & Fdy.
	2	Mail-Storage	..	2nd qtr., '47	Amer. Car & Fdy.
	1AC	4 bedroom-2 drawing room-4 compartment	..	2nd qtr., '47	Amer. Car & Fdy.
	2AC	4 bedroom-16 duplex roomette	..	2nd qtr., '47	Amer. Car & Fdy.
	1AC	6 section-6 roomette-4 bedroom	..	2nd qtr., '47	Amer. Car & Fdy.

"Afternoon Puget Sounder," while the Twin Cities-Grand Forks streamliner has not yet been named. Schedules of all three will be faster than now and each will make one daily round trip. The consist of each will be as follows: Each "Puget Sounder," one mail-baggage car, two coaches, one coach-cafe and one lounge-observation car; the Twin Cities-Grand Forks streamliner, one mail-baggage car, three coaches and one parlor-cafe. One new single-unit, 2,000-hp. Diesel-electric locomotive, ordered from Electro-Motive, will be used for each train. The approximate cost of all three, including motive power, is $1,900,00.

In addition, the Great Northern is building in its own shops a three-car streamliner to run between Havre, Mont., and Great Falls, connecting at the latter place with the new "Empire Builders." This train, to be Diesel-powered and air-conditioned, will include one coach, a cafe-parlor car and a combination engine and baggage unit, and the contemplated schedule will be faster than at present.

Most of the coaches ordered by the **Illinois Central** will be used in the new de luxe all-coach train, the "City of New Orleans," operating between Chicago and New Orleans, La., and the "Daylight" and the "Green Diamond" between Chicago and St. Louis, Mo. The remaining coaches will replace equipment in the road's major trains. One tavern-coach-crew car, one parlor-bar-lounge car, one dining car and one parlor-observation car also will be used in the "Green Diamond." The schedules of the Chicago-St. Louis trains have not been determined as yet, but the run will take approximately five hours. The "City of New Orleans," all the cars of which will bear names of streets or locations in New Orleans, it is contemplated, will leave Chicago or New Orleans at about 8 a.m., arriving at its destination before midnight on the same day. All the trains will be hauled by Diesel-electric locomotives. The "Daylight" and the Chicago-New Orleans train, including the latter's Louisville, Ky.-Fulton connection, will absorb the 21 specialty cars being built in the road's own shops.

The coaches and specialty cars will have interior finishes mostly of pastel tones and the former will be equipped with two toilets for women. Window glass in some cars will be heat resisting and in others it will be of thermopane. The windows will be shaded with Venetian blinds. Coach seats will be reversible and adjustable to various angles. Overhead lighting will be of the incandescent type. Directional lighting will be installed in luggage racks over the seats, with separate beams for the occupant of each seat. Various wood

and pastel shades, such as blue, cedar and yellow, green and marigold, wine gray and blue and red and tan, with drapes to match, will be used in dining car interiors. Fluorescent lighting will be used for decorative effects as well as illumination. Windows will be equipped with heat-resistant glass and Venetian blinds. The exteriors of all the cars will be finished in rust brown from the roof to the window base line and orange below. These colors will be separated by a narrow line of canary yellow and a similar yellow strip will appear above the windows and at the bottom edge of the car body.

The two mail-baggage-dormitory cars on order for the **Kansas City Southern** will be of steel construction and the six coaches, eight sleeping cars and two dining cars will be of aluminum construction. All the cars will be used in the "Southern Belle" trains between Kansas City and New Orleans on a schedule of about 16 hours. The trains also will have tavern-lounge-observation cars which are being built from some of the road's present equipment. Unusual table arrangements are being planned for the dining cars. For the tables, which will have several shapes, including triangles and quadrangles, leather-upholstered divan seats will be arranged along the side of the car, while other conventional tables will have leather-upholstered chairs.

Three of the 6 bedroom-10 roomette sleeping cars ordered by the **Louisville & Nashville** will be used in the renewal of equipment on the Pennsylvania's "Cincinnati Limited" operating between New York and Cincinnati and connecting with L. & N. trains at the latter city. The cars, costing approximately $317,000, will be used in through sleeping car service between New York, at one end, and Louisville, Nashville, Ky., Memphis, Tenn., and Birmingham, Ala., at the other end. The additional 12 cars on order for this road are to cost about $1,100,000 and will provide its share of the equipment necessary for the new New York-New Orleans **streamliners** operated in conjunction with the Pennsylvania, the Southern and the West Point Route, via Washington, D. C., Atlanta, Ga., and Montgomery, Ala. The L. & N. also is continuing its program of transforming 14 of its 70-ft. combination baggage and passenger cars into modern, air-conditioned coaches, two of which have been completed. These coaches will seat 48 passengers and as completed are being fed into regular service.

The 14 cars ordered by the **Missouri-Kansas-Texas** will be put into service about April, 1947, as a new, streamlined "Texas Special," the consist of which will be as follows: Three chair cars, one dining car, one mail-baggage

Passenger Cars on Order for Domestic Service, November 1, 1946 (Con.)

Railroad	Number	Type	Seating Capacity	Date of Delivery	Builder
Chicago & North Western (Cont.)	26AC	Coach	64	3rd qtr., '47	Pullman-Standard
	1AC	Coach with nurse's room	56**	3rd qtr., '47	Pullman-Standard
	9AC	Parlor	35	3rd qtr., '47	Pullman-Standard
	4	Mail-Bag	..	3rd qtr., '47	Pullamn-Standard
	1AC	Dining	48	3rd qtr., '47	Pullman-Standard
	1AC	Cafe coach	22	3rd qtr., '47	Pullman-Standard
	4AC	Tap-Dining-Lnge	38	3rd qtr., '47	Pullman-Standard
Delaware, Lackawanna & Western	6	Sleeping	..	.....	Amer. Car & Fdy.
	15	Coach	..	2nd & 3rd. qtrs., '47	Amer. Car & Fdy.
	2	Dining	..	2nd & 3rd qtrs., '47	Budd
	2	Tavern-Lnge	..	2nd & 3rd qtrs., '47	Budd
Denver & Rio Grande Western	4	Coach	..	.....	Budd
	1	Bag.-Exp.	..	.....	Budd
	2	Dining	..	.....	Budd
	6	Sleeping	..	.....	Budd
Erie	7AC	10 roomette-6 bedroom	..	1st qtr., '47	Pullman-Standard
Florida East Coast	15AC	Sleeping	..	Late '47	Pullman- Standard
	3AC	Sleeping	..	Late '47	Amer. Car & Fdy.
	5AC	Coach	..	Late '47	Pullman-Standard
	2AC	Dining	..	Late '47	Pullman-Standard
	1	Baggage	..	Late '47	Amer. Car & Fdy.
	1AC	Bar Lounge	..	Late '47	Amer. Car & Fdy.
	1AC	Coach	..	Late '47	Budd
Great Northern	12AC	Coach	48	Dec., 1946	Pullman-Standard
	4AC	Coach	60	Dec., 1946	Pullman-Standard
	4AC	Coffee Shop-Lnge.-Dorm.	20	Dec., 1946	Pullman-Standard
	4AC	Dining	36	Dec., 1946	Pullman-Standard
	12AC	Sleeping	24	Dec., 1946	Pullman-Standard
	4AC	Bedroom	22	Dec., 1946	Pullman-Standard
	4AC	Bed.-Lounge	35	Dec., 1946	Pullman-Standard
	4	Bag.-Mail	..	Dec., 1946	Pullman-Standard
	1AC	Cafe-Parlor	..	Dec., 1946	Company Shops
	1AC	Coach	..	Dec., 1946	Company Shops
	1	Engine and baggage	..	Dec., 1946	Company Shops
	7AC	Coach	60	3rd qtr., '47	Amer. Car & Fdy.
	2AC	Coach-cafe	28	3rd qtr., 47	Amer. Car & Fdy.
	3	Bag.-Mail	..	3rd qtr., '47	Amer. Car & Fdy.
	1AC	Parlor-Cafe	20	3rd qtr., '47	Amer. Car & Fdy.
	2AC	Lnge.-Observ.	32	3rd qtr., '47	Amer. Car & Fdy.
Illinois Central	27AC	Coach	56	4th qtr., '46	Pullman-Standard
	4AC	Coach	48	4th qtr., '46	Pullman-Standard
	1AC	Tavern-Coach-Crew	38	2nd qtr , '47	Pullman-Standard
	1AC	Parlor-Bar-Lnge	36	2nd qtr., '47	Pullman-Standard
	1AC	Dining	48	2nd qtr., '47	Pullman-Standard
	1AC	Parlor-Observ.	26	2nd qtr., '47	Pullman-Standard
	21AC	Various	..	Winter, '46-'47	Company Shops
Illinois Terminal	3	Baggage-Coach	..	.....	St. Louis Car
	2	Coach	..	.....	St. Louis Car
	3	Parlor-Dining	..	.....	St. Louis Car
International Great Northern	2	Mail	..	.....	Amer. Car & Fdy.
	2	Various	..	.....	Amer. Car & Fdy.
	2	Coach	..	.....	Amer. Car & Fdy.
	2	Dining	..	.....	Amer. Car & Fdy.
	6	Sleeping	..	.....	Pullman-Standard
Kansas City Southern	4AC	Coach	60	.....	Amer. Car & Fdy.
	2AC	Coach	64	.....	Amer. Car & Fdy.
	2	Bag.-Mail-Dorm.	..	.....	Amer. Car & Fdy.
	8AC	4 bedroom-16 duplex roomette	..	.....	Pullman-Standard
	2AC	Dining	36	.....	Amer. Car & Fdy.
Long Island	10	Double-deck Coach	134	Jan.'47	Company Shops
Louisville & Nashville	2	Bag.-Dorm.	..	Aug., '47	Amer. Car & Fdy.
	1	Dining	48	Aug., '47	Budd
	3	Coach	60	Aug., '47	Budd
	5	6 bedroom-10 roomette	..	Oct., '47	Pullman-Standard
	2	5 bedroom-bar-lnge.-observ.	..	Oct., '47	Pullman-Standard
	2	Mail	..	Oct., '47	Pullamn-Standard
Minneapolis & St. Louis	6AC	Coach	..	.....	Budd
Missouri-Kansas-Texas	1	Mail-Bag	..	1947	Pullman-Standard
	3AC	Chair	56	1947	Pullman-Standard
	1AC	Chair-Lnge.-Buff.	..	1947	Pullman-Standard
	7AC	14 roomette-4 bedroom	..	1947	Pullman-Standard
	1AC	Lounge-Buff.-Observ.	..	1947	Pullman-Standard
	1AC	Dining	36	1947	Pullman-Standard
Missouri-Pacific	12	Coach	..	.....	Amer. Car & Fdy.
	2	Coach-Comb.	..	.....	Amer. Car & Fdy.
	1	Bag.-Exp.	..	.....	Amer. Car & Fdy.
	11	Dining	..	.....	Amer. Car & Fdy.
	4	Mail	..	.....	Amer. Car & Fdy.
	3	Coach-Dorm.	..	.....	Amer. Car & Fdy.
	6	Coach	..	.....	Budd
	4	Sleeping	..	.....	Budd
	22	Sleeping	..	Begins Feb., '47	Pullman-Standard
Nash., Chatt. & St. Louis	1	Mail-Bag	..	1946	Company Shops
	1AC	Coach-Lnge.-Dinette	52	1946	Company Shops
	1AC	Tavern-Din.	48	1946	Company Shops
	2AC	Coach	56	1946	Company Shops
	1AC	Coach-Lnge.-Observ.	69	1946	Company Shops
New York Central	54AC	Coach	56	Dec., '46	Budd
	9AC	Dining	70†	1st qtr., '47	Budd
	9AC	Kitchen-Lnge	21	1st qtr., '47	Budd
	4AC	Tavern-Lnge.-Observ.	53	1st qtr., '47	Budd
	12	Bag.-Dorm	..	1st qtr., '47	Budd
	13AC	Tavern-Lnge	47	1st qtr., '47	Budd
	13AC	Parlor-Observ.	40	1st qtr., '47	Budd
	16AC	Grill-Din.	44	1st qtr., '47	Budd
	12AC	Dining	44	1st qtr., '47	Budd
	31AC	22 single room	22	Aug., '47	Budd
	40AC	10 single room-6 double bedroom	22	Aug., '47	Budd

(*Table continued on next page*)

Passenger Cars on Order for Domestic Service, November 1, 1946 (Con.)

Railroad	Number	Type	Seating Capacity	Date of Delivery	Builder
New York Central (Cont.)	11AC	6 double bedroom-bar-lnge.	12, 22	Aug., '47	Budd
	7AC	5 double bedroom-bar-lnge.-observ.	25	Aug., '47	Budd
	9	Bag.-Dorm.	19 berths	April, '47	Pullman-Standard
	4AC	Dining	68	April, '47	Pullman-Standard
	2AC	Kitchen-Lnge.	23	April, '47	Pullman-Standard
	2AC	Kitchen-Dorm.	15 berths	April, '47	Pullman-Standard
	7AC	Dining	44	April, '47	Pullman-Standard
	2AC	Barber-Bar-Lnge.-Secretary	30 lnge. seats	Nov., '47	Pullman-Standard
	45AC	Single room	22	Nov., '47	Pullman-Standard
	97AC	10 single room-6 double bedroom	22	Nov., '47	Pullman-Standard
	16AC	6 double bedroom-bar-lnge.	12, 22	Nov., '47	Pullman-Standard
	14AC	12 double bedroom	24	Nov., '47	Pullman-Standard
	2AC	5 double bedroom-bar-lnge.-observ.	25 seats	Nov., '47	Pullman-Standard
	98	Baggage	..	Jan., '47	Amer. Car & Fdy.
	4	Mail	..	Jan., '47	Amer. Car & Fdy.
	2	Mail-Bag.	..	Jan., '47	Amer. Car & Fdy.
	22AC	Passenger-Bag.	48	1st qtr., '47	Amer. Car & Fdy.
New York, New Haven & Hartford	100AC	Coach	..	1947	Pullman-Standard
	10AC	Dining	..	1947	Pullman-Standard
	15AC	Grill	..	1947	Pullman-Standard
	55AC	Various	..	1947	Pullman-Standard
Norfolk & Western	3AC	10 roomette-6 double bed	..	2nd qtr., '47	Pullman-Standard
	10AC	Coach	58	2nd qtr., '47	Pullman-Standard
	2AC	Coach-Locker	50	2nd qtr., '47	Pullman-Standard
	2AC	Coach-Compartment	68	2nd qtr., '47	Pullman-Standard
	2AC	Dining	48	2nd qtr., '47	Pullman-Standard
	2AC	Tavern-Lnge.-Observ.	54	2nd qtr., '47	Pullman-Standard
Northern Pacific	36	Coach	..	1st half, '47	Pullman-Standard
	24	Sleeping	..	1st half, '47	Pullman-Standard
	12	Mail-Bag.	..	1st half, '47	Pullman-Standard
	6	Lunch Car-Din.	..	1st half, '47	Pullman-Standard
Pennsylvania	65AC	Coach	..	1947	Company Shops
	5	Bag.-Exp.	..	1947	Company Shops
	5AC	Parlor-Club	..	1947	Company Shops
	15AC	Dining	..	1947	Company Shops
	21AC	Coach	..	1947	Amer. Car & Fdy.
	4	Bag.-Exp.	..	1947	Amer. Car & Fdy.
	28AC	Sleeping	..	1947	Amer. Car & Fdy.
	5AC	Dining	..	1947	Amer. Car & Fdy.
	5AC	Various	..	1947	Amer. Car & Fdy.
	107AC	Sleeping	..	1947	Pullman-Standard
	10AC	Coach	..	1947	Budd
	2AC	Coach-Comb.	..	1947	Budd
	56AC	Sleeping	..	1947	Budd
	12AC	Dining	..	1947	Budd
	6AC	Various	..	1947	Budd
Pere Marquette	2	Coach	..	.....	Pullman-Standard
	2	Dining	..	.....	Pullman-Standard
Reading	8	MU coach	..	.....	Amer. Car & Fdy.
Richmond, Fredericksburg & Potomac	8AC	Coach	52	Jan., '47	Budd
	11AC	Sleeping	..	2nd qtr., '47	Pullman-Standard
	2AC	Sleeping	..	2nd qtr., '47	Amer. Car & Fdy.
	3AC	Coach	54	4th qtr., '47	Pullman-Standard
	4AC	Coach	70	1st qtr., '47	Amer. Car & Fdy.
	1AC	Dining	..	4th qtr., '47	Pullman-Standard
	1AC	Cafe-Parlor	..	1st qtr., '47	Amer. Car & Fdy.
St. Louis-San Francisco	3	Mail-Bag.	..	Early 1947	Pullman-Standard
	2AC	Chair-Dorm.	32	Early 1947	Pullman-Standard
	9AC	Chair	56	Early 1947	Pullman-Standard
	3AC	Chair-Lnge.	51	Early 1947	Pullman-Standard
	17AC	14 roomette-4 double bed	..	Early 1947	Pullman-Standard
	2AC	Din.-Lnge.	42	Early 1947	Pullman-Standard
	1AC	Dining	..	Early 1947	Pullman-Standard
	1AC	Observ.-Lnge.	..	Early 1947	Pullmna-Standard
Seaboard Air Line	3	Sleeping	..	.....	Amer. Car & Fdy.
	12	Coach	..	.....	Budd
	3	Bag.-Exp.	..	.....	Budd
	6	Sleeping	..	.....	Budd
	15	Dining	..	.....	Budd
	13	Sleeping	..	.....	Pullman-Standard
Southern	11	Coach	..	.....	Amer. Car & Fdy.
	3	Mail-Bag.	..	.....	Amer. Car & Fdy.
	2	Dining	..	.....	Amer. Car & Fdy.
	2	Lnge.-Bar.	..	.....	Amer. Car & Fdy.
	2	Bag.-Dorm.	..	.....	Amer. Car & Fdy.
	7	Dining	..	.....	Budd
	19	Coach	..	.....	Budd
	6	Coach-Lnge.	..	.....	Budd
	47	Sleeping	..	.....	Pullman-Standard
	2	Mail-Bag.	..	.....	Pullman-Standard
Southern Pacific	3	Mail-Bag.	..	Summer, 1947	Pullman-Standard
	2AC	Chair	46	Summer, 1947	Pullman-Standard
	2AC	Chair	38	Summer, 1947	Pullman-Standard
	14AC	Chair	48	Summer, 1947	Pullman-Standard
	3AC	Chair	44	Summer, 1947	Pullman-Standard
	2AC	Coffee Shop	66	Summer, 1947	Pullman-Standard
	2AC	Kitchen	..	Summer, 1947	Pullman-Standard
	2AC	Dining	60	Summer, 1947	Pullman-Standard
	2AC	Dining	44	Summer, 1947	Pullman-Standard
	4AC	Dining	48	Summer, 1947	Pullman-Standard
	3AC	Dining	36	Summer, 1947	Pullman-Standard
	2AC	Refreshment	54	Summer, 1947	Pullman-Standard
	2AC	Kitch.-Dorm.	..	Summer, 1947	Pullman-Standard
	2AC	Lounge	44	Summer, 1947	Pullman-Standard
	2AC	Lounge	39	Summer, 1947	Pullman-Standard
	4AC	Coffee Shop-Lnge.	46	Summer, 1947	Pullman-Standard
	1AC	Bag.-Dorm.	..	Summer, 1947	Pullman-Standard

car, one chair-lounge-buffet car, seven sleeping cars of the 4 bedroom-14 roomette type and one observation-sleeping-lounge car. A duplicate set of such equipment is on order for the St. Louis-San Francisco, which jointly operates this St. Louis-San Antonio, Texas, run with the Katy. The trains, each of which will cost about $2,000,000, will be hauled by Diesel-electric motive power.

The six cars being built in the Nashville shops of the **Nashville, Chattanooga & St. Louis** will be used in a new daylight train, the "City of Memphis," which, it is hoped, will be inaugurated in December of this year. The train will operate between Nashville and Memphis on a five-hour schedule, but the exact departure and arrival times have not been determined. All cars, except the mail-baggage, will be air-conditioned and equipped with radios and loudspeakers for train announcements. The motive power will be a modernized high-speed steam locomotive equipped with roller bearings.

The **New York Central** has on order a total of 559 new passenger cars which are the undelivered remainder of orders for 720 cars placed with the Budd Company, Pullman-Standard and American Car & Foundry. The approximate cost of all the new equipment is $56,000,000 and it will be used in the long distance trains running between New York and Detroit, Cleveland, Chicago and St. Louis and between Boston, Mass., and the above mid-western cities. Trains to receive new equipment are the "Twentieth Century," the "Commodore Vanderbilt," the "Advance Commodore Vanderbilt," the "Southwestern Limited," the "Detroiter," the "Wolverine," the "Cleveland Limited," the "Iroquois," the "Ohio State Limited," the "New England States" and the "Motor City Special." Many of these trains will be furnished with Diesel-electric locomotives. No changes from the present running times have been announced.

The 180 new cars on order for the **New York, New Haven & Hartford** will cost about $13,500,000 and are sufficient to re-equip completely all the road's regular Shore Line expresses between New York and Boston, the Boston-Washington and Philadelphia runs via the Hell Gate bridge route and several New York-Springfield, Mass., schedules. Exteriors of the cars will be finished in shining corrugated metal, accented by a green hunter band running lengthwise at window height. All orthodox methods of lighting have been discarded in favor of a new system, developed by the New Haven's own engineers, which fills the cars with a completely diffused, glareless and shadowless light.

Of the 21 cars ordered by the **Norfolk & Western,** the three sleeping cars of

the 10 roomette-6 double bedroom type will be pooled with similar cars furnished by connecting roads and operated in overnight service between Norfolk, Va., Roanoke, Williamson and New York. The remaining 18 cars will be used in the "Powhatan Arrow," operated daily—one train in either direction—between Norfolk and Cincinnati, making up two fully-streamlined, all-coach, reserved seat trains.

The cars ordered by the **Northern Pacific** are being built principally for use in the new streamlined trains running between Chicago and the Pacific northwest in conjunction with the Burlington. The trains will have Diesel-electric locomotives, six of which are on order with Electro-Motive, and the total cost of the equipment, including the locomotives, will be in the neighborhood of $9,000,000.

Fourteen of the cars ordered by the **St. Louis-San Francisco** will be used to make up a new "Texas Special," the Frisco's share of two new trains to be put into the St. Louis-San Antonio service operated in conjunction with the Katy. The other 24 cars will comprise the two sets of equipment necessary for the operation of the "Meteor Flash" between St. Louis and Oklahoma City, Okla. Both trains will be Diesel-powered.

The **Southern Pacific's** 52 cars will be used in two new trains—the "Shasta Daylight" and the "Golden State Streamliner"—and in the present "Overland Limited," "Golden State Limited" and the "Cascade." The "Shasta Daylight" will be operated between San Francisco and Portland, Ore. Two sets of equipment will be in service, leaving Portland and San Francisco each morning and arriving in the evening, operating via the Cascade line of the road's Shasta route. Each train will be completely streamlined and will include one mail-baggage car, nine chair cars, a triplex articulated unit with dining-kitchen-coffee shop cars, a refreshment car and a parlor-observation car. All passenger cars will have outlets for radio and informatory announcements by the train passenger agent as well as recorded music from a wire recorder set. Chair car windows will be much higher than usual to permit passengers a better view of the mountain scenery through which the train will pass for hours. Interior color schemes will be based on the soft blues, greens and browns of Oregon's mountains, rivers and forests. The exteriors of the cars and the Diesel-electric locomotives will be painted in red, orange and black. The "Golden State Streamliner," only tentatively so named, will operate on a 39¾-hour schedule three days a week in each direction between Chicago and Los Angeles over the Golden State route. Two sets of specially built equipment will be used, including five Pullman cars, three chair cars, one sleeper-lounge-observation car, a dining car, a coffee shop-lounge car for chair car passengers and one baggage-dormitory car.

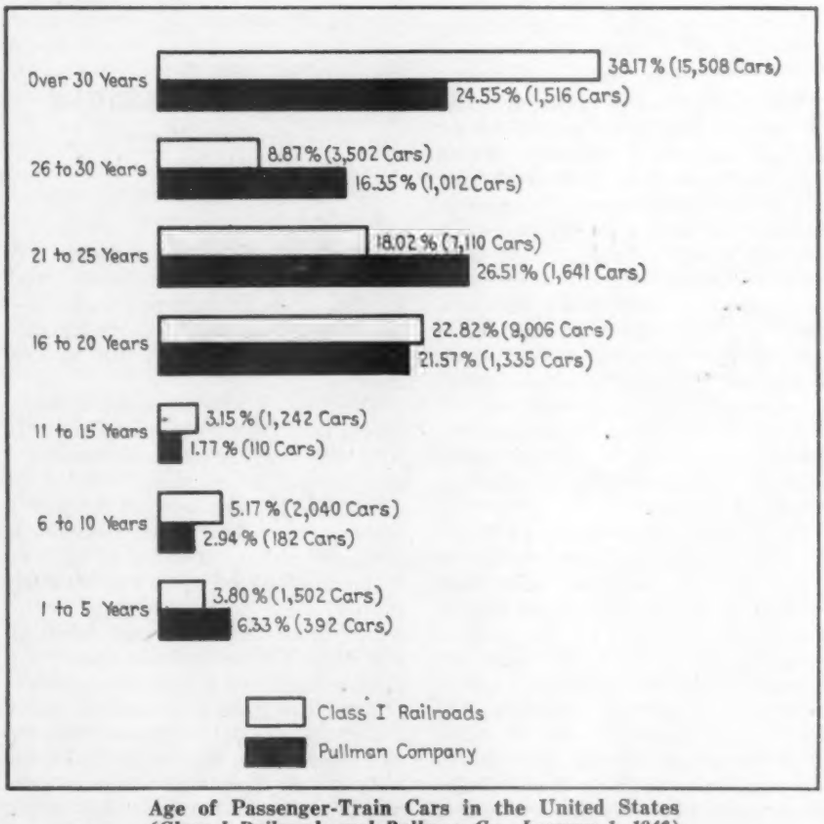
For the "Cascade," the Southern Pacific is purchasing two triplex articulated dining-lounge units similar to those which have proved so popular on the San Francisco-Los Angeles "Lark."

(*Continued on page 846*)

Passenger Cars on Order for Domestic Service, November 1, 1946

Railroad	Number	Type	Seating Capacity	Date of Delivery	Builder
Texas & Pacific	5	Bag.-Exp.	..	.....	Amer. Car & Fdy.
	5	Mail	..	.....	Amer. Car & Fdy.
	4	Various	..	.....	Amer. Car & Fdy.
	8	Coach	..	.....	Amer. Car & Fdy.
	4	Dining	..	.....	Amer. Car & Fdy.
	19	Sleeping	..	.....	Pullman-Standard
Union Pacific	15AC	Sleeping	..	.....	Amer. Car & Fdy
	10AC	Lunch Counter-Din.	..	.....	Amer. Car & Fdy.
	9AC	Club-Lnge.	..	.....	Amer. Car & Fdy.
	6AC	Club-Dorm.	..	.....	Amer. Car & Fdy.
	3AC	Cafe-Lnge.	..	.....	Amer. Car & Fdy.
	11AC	Dining	..	.....	Amer. Car & Fdy.
	11	Mail-Bag.	..	.....	Amer. Car & Fdy.
	6	Mail	..	.....	Amer. Car & Fdy.
	9AC	Bag.-Dorm.	..	.....	Amer. Car & Fdy.
Wabash	4	16 roomette-4 bedroom	..	.....	Amer. Car & Fdy.
	4	Coach	..	.....	Amer. Car & Fdy.
	1	Baggage†	..	.....	Amer. Car & Fdy.
	2	Coach-Smoker†	..	.....	Amer. Car & Fdy.
	1	Coach-Buff†	..	.....	Amer. Car & Fdy.
	1	Dining†	..	.....	Amer. Car & Fdy.
	1	Chair-Observ†	..	.....	Amer. Car & Fdy.
	1	Mail-Bag	..	.....	Amer. Car & Fdy.
Western Pacific	2	Baggage†	..	1947	Budd
	7AC	Chair	..	1947	Budd
	2AC	Tourist	..	1947	Budd
	2AC	Coffee Shop-Lnge.-Dorm.	..	1947	Budd
	2AC	Dining†	..	1947	Budd
	5AC	10 roomette-6 bedroom	..	1947	Budd
	2AC	3 bedroom-1 drawing room†	..	1947	Budd

AC—Indicates air-conditioned. Information not available for many cars not so marked.
*—Jointly with the Maine Central.
**—Not including nurse.
†—Including seats for six waiting patrons.



Age of Passenger-Train Cars in the United States
(Class I Railroads and Pullman Co., January 1, 1946)

Let's Give the Travel Market a REAL Test

". . . have-to-travel market is relatively small and inelastic. The voluntary travel market is elastic and practically limitless."— JOHN W. BARRIGER.

I. C. C. figures have given passenger business an unmerited red-ink reputation—Actually it offers most likely means for profitable utilization of idle time of railroad plant

By JOHN W. BARRIGER
President, Monon

THE possibilities of passenger traffic as an earner of net income for the railroads deserve a thorough testing which they have never yet received. The bulk of railroad investment consists in roadway and track—and yet, even on a relatively busy railroad, most track handles less than half the train movements which it could easily accommodate. If trains could be provided, earning anything whatever above out-of-pocket cost, to use up the spare capacity of tracks now idle more than half the time, the result would be net gain for the railroads. For the public it would mean a convenient travel service now largely denied them.

The railroads have to a large degree set themselves up to provide service for people who *have* to travel, rather than catering to those who would like to travel, but do not have to. The *have-to-travel* market is relatively small and inelastic. The voluntary travel market is elastic and practically limitless. The desire to be somewhere else is almost as strong in the average American as the urge to reproduce the species. The automobile has gone out after this market and in so doing has become the nation's principal manufacturing industry. A substantial fraction of automobile travel has now, of course, become a necessity—but it started out wholly in the pleasure category and most of it still remains there.

There was a time when the ordinary citizen used the telegraph only if somebody died—and the telegraph messenger was almost a recognized symbol of catastrophe. Travel by train, aside from business travel, was looked upon almost in the same light. It still is so regarded by too many of the public and too many railroad men—as something to be resorted to by the public only when all else fails and by railroad men as a nuisance to be avoided wherever possible.

There are historic reasons for these attitudes. The railroad came into being as a substitute for the mud road. Everybody wanted a railroad wherever there was a mud road—and this led to the building of railroads into many areas of sparse traffic. It also meant that a railroad could be cheaply built with rugged grades and curvature, and still provide transportation much more cheaply than its only rival. Transportation on railroads so built was soundly economical in its day, but not now, when *relatively* economical transportation is available by automotive vehicles on paved roads. With local and retail transportation thus now economically provided for by highway, the railroads can thrive only if they concentrate their efforts on service which rivals cannot equal, i. e., on volume business. To attract volume business and handle it profitably they need to get rid of their characteristics of the horse-and-buggy days (e. g., heavy grades and curvature) and to seize upon the economies which are inherent in railroad transportation but are seldom fully realized.

The Interstate Commerce Commission's method of dividing operating expenses between freight and passenger service has been a major obstacle to the development of modern passenger service, because the kind of figuring the I. C. C. does happens to run parallel to the natural prejudices of most rail-

road operating officers. These figures, which divide common expenses on the basis of fuel consumption, show passenger service—except during the war—as hopelessly in the "red." Such figures are ridiculous and indefensible. Passenger service with very few exceptions is a by-product, and it is utterly unrealistic to charge a by-product with a *pro rata* share of all expenses. A by-product is profitable if it earns anything whatever above the costs which would be avoided if it were eliminated; and that is the way passenger service operating expenses ought in honesty to be computed.

Railroad operating officers are human beings and subject to the limitations of that status. Their main business is and will continue to be the hauling of freight, where being 15 minutes to an hour late often does not make much difference. Habituated to this kind of comfortable performance, it is only natural that these men should have an aversion for a type of service which has to be operated on time right to the minute. They don't like it, and the I. C. C. figures have only too easily persuaded them that, in disliking it and trying to get rid of all of it they can, they are not disloyal to the railroads, but are doing the railroads a favor. If the I. C. C. figures were truly to reflect the facts, namely, that this service earns or could earn for the railroads a contribution to net income which would otherwise be lost, I am sure that the operating department would overcome its dislike for passenger service and would pitch in to make it a success.

Cleanliness a Nuisance

Passenger traffic entails other things which are not, by nature, attractive to the operating department—accustomed as it is to dealing most of the time with inanimate freight. Among these things is cleanliness. It is a nuisance and not a masculine trait to be chasing dirt all the time, and it is not to be wondered at that the operating department has been only too willing to be told by the I. C. C. that the sanitation which passenger service requires is something that the railroads could profitably dispense with. Freight service requires little or no contact between the operating department and the public, and if there were no passenger traffic to worry about, then operating officers would be saved the distasteful task of trying to educate their employees in the niceties of proper deportment toward the traveling public—an accomplishment in which many of these officers themselves are, perhaps, not notably proficient.

Nevertheless, operating department officers and employees are loyal railroaders and, if we can demonstrate to them, as I have no doubt we can, that a large and thriving passenger traffic is both desirable for the railroads and attainable, then they will co-operate with us to provide the service that will assure us that traffic.

There is one objection that the operating department has had to passenger traffic which was, until recently, quite well-founded. That is that—with the poor communication system between dispatchers and trains which has only lately been overcome—passenger trains, operating at higher speeds than freight trains, disrupt the operation of freight trains, unduly delaying them. This was a valid complaint, but it has now been dissipated by centralized train control (both the complete and the modified varieties). With this device, passenger service imposes little if any delay on freight trains.

Permit me to say again that the economic justification for attempting to maximize passenger service lies in the fact that the preponderant railroad investment lies in the roadway and that, on most railroads, this investment is now idle and earning nothing for more than half the time. Any service which we can put on these rails to use up their idle time, which will earn anything whatever above the out-of-pocket cost, will be so much net gain for the railroads.

We cannot automatically and proportionately expand freight traffic by increasing speed and economy, because the volume of freight is to a large degree determined by the volume of industrial production. We cannot, for example, increase the movement of machinery if we reduce rates while the manufacturer, at the same time, may be increasing his prices. The consumer, that is, does not buy freight transportation; he buys commodities; and the freight rate is only one element, and maybe an insignificant one, in the selling price of the commodity. But with passenger service, the final product is in our own hands. We sell direct to the consumer. If we make our service attractive and price it right in relation to the predominant level of family incomes we shall get the business.

We cannot tell in terms of cents per mile what will be an attractive price for passenger transportation until we know what the prevailing level of wages and family incomes is going to be. Actually, at the present time, 2.2 cents per mile plus a federal tax of 15 per cent, giving a total cost of 2.53 cents, is an easier fare for most people to pay than 2 cents per mile was before the war.

We can, of course, develop freight traffic to some extent by economy, good service, and skillful and attractive pricing—but we are still to a large degree dependent upon the co-operation of the manufacturer and the merchant. We cannot haul goods which manufacturers do not make, or which customers refuse to buy—no matter how attractive we make our rates or service. But with passengers the case is different. We know that people want to travel. So it simply remains a problem for our ingenuity to give them a service and rates which will appeal to their desires, and find ways of doing it which will yield us more revenue than the service costs.

Consider the enormous potential earnings of a modern passenger car if we can provide the kind of service to fill it and keep it moving. Such a car, not overcrowded, will earn 75 cents per mile. At only 300 miles per day, that is $225 per day.

Freight revenues in 1944 averaged less than $10 per freight-car day, or only 50 cents per freight-car hour. An understanding of this contrast between the earning power of freight and passenger equipment may account for the fact that passenger car builders are booked to capacity many months ahead, while freight car orders can be filled with reasonable promptness.

Half-Way Measures Will Fail

But, to give passenger service a real trial, we shall have to bid good-bye to the kind of slow and costly railroading which served the purpose well enough when the horse and buggy was our only competitor. We shall have to set a program of roadway improvements looking to the eventual elimination of all speed-restricting curvature and grades in excess of 0.5 per cent (except in mountain territory). We shall have to establish C. T. C. everywhere. We shall have to educate our supervisors and employees in the economics of what we are endeavoring to do; in their selfish interest in the success of the program; and in dealing diplomatically with the public. We shall have to provide, not only comfort and speed, with safety, but more frequent schedules than those now obtaining.

This will be quite an undertaking, but it looks to me like the best, and indeed the only, means that we have of maximizing the use of existing facilities. Putting railroad plant to work and keeping it busy is the way to greater earnings for investors, greater security of employees in their jobs, greater opportunities for promotion, and improved and more economical service for the public—for our freight patrons as well as those who ride our trains. Whatever net earnings we can derive from idle time of railroad facilities will mean just that much smaller burden of overhead which we shall have to charge to our freight patrons. The foregoing are not just theories put forth for discussion, but policies which we expect to put into actual effect on the Monon just as rapidly as conditions will permit.

Colorfully painted low-alloy steel car built by Pullman-Standard

What Will New Passenger Cars Be Like?

Full strength requirements will be met with lighter materials and welded construction—Intensive effort to satisfy every possible passenger need and desire

THE article on car design in the Passenger Progress issue of *Railway Age* a year ago covered such innovations as observation domes, ultra-modern coaches, radically improved sleepers, diners, lounge and special-purpose cars adapted to meet almost every conceivable passenger service requirement. Owing to the lack of radically new developments in basic car design during the past twelve months, the present discussion will be devoted largely to materials and parts which enter into the construction of modern passenger cars having maximum appeal to the traveling public.

Four Basic Materials

As pointed out in the symposium on passenger-car design at the last annual meeting of the A. S. M. E. Railroad Division, four basic materials, used in building passenger cars, include copper-bearing mild carbon steel, low-alloy high-strength steels, stainless steels and aluminum alloys. New alloys with improved properties have been developed, particularly in low-alloy high-strength steels and aluminum, and experience shows that all of these materials can be used in car designs which exceed minimum A. A. R. strength requirements. The decision regarding which of the four materials to use in any particular instance will depend on considerations of relative weight, cost, probable service life, appearance, etc.

Weight saving is an important factor, particularly in view of reduced operating costs attendant upon hauling more cars with the same motive power or the same number of cars at higher speeds. How much it is worth to railroads to effect this reduction in weight of passenger cars? One answer given at the symposium referred to was one dollar per pound of weight saved.

The structural shell weight of a modern passenger car is only about one-third of the completed car weight, the percentage of total car weight which may be saved by using light high-strength structural materials being proportionately limited. The total truck weight, for example, will approximately equal the weight of the structural shell made of low-alloy high-tensile steel. The necessity for due attention to truck design and reducing the weight of car interior finish, specialties and equipment is therefore apparent.

Other things being equal, passenger cars can be made of mild carbon steel at the lowest cost, but with a definite penalty in the way of increased car weight. Considering modern coaches of equivalent strength with four-wheel trucks and other equipment essentially the same, competent car designers say that the use of low-alloy high-strength steel or stainless steel, in conjunction with welding, will save about eight per cent of the total car weight over carbon steel construction, and aluminum approximately twice as large a proportion.

Cost of Lower Weight

The cost of welded low-alloy high-strength steel cars is generally less than stainless steel or aluminum for designs of equal strength. The cost of aluminum decreased with stepped-up production until wage advances early this year caused a slight up-turn. Increased use of aluminum alloys both for new cars and for the major portion of framing members, as well as inside finish and fittings, of some cars may be anticipated. Aluminum-alloy construction is indicated where minimum weight is required due to power limitations or other factors.

To secure the desired exterior appearance, new passenger cars may be finished in a shiny metal, painted surface, or a combination of the two. Fluted sections of stainless steel make an attractive exterior surface and may be applied to

framing of low-alloy high-strength steel or to stainless-steel car structures. In general, this surface is not adapted to the application of paint coatings. Similar shiny exterior surfaces can be provided by the use of extruded anodized aluminum moldings in connection with cars of aluminum construction.

Painted exteriors are generally used with the low-alloy steels and with aluminum. The use of spot-welded construction assures smooth car sides without exposed rivet heads or other projections, which makes cleaning easy and prevents the accumulation of dirt at these points. The painted exterior or the combination of painted surfaces with unpainted fluted surfaces has the advantage of associating in the public mind distinctive color schemes with the equipment operated by individual railroads.

Truck Features

Before proceeding further with the discussion of passenger-car body materials and parts, it may be well to consider the important question of trucks. Unless axle loads are such as to require more than two axles per truck, the four-wheel truck is preferred. When properly designed, with long-travel springs suitably snubbed and other features, the four-wheel truck has demonstrated superior riding properties and full safety in operation at substantially reduced weight and cost as compared with six-wheel trucks. The possibility of further weight savings in four-wheel trucks seems relatively small. If the truck frame and center plate, for example, were made of alloy cast steel, there would be a 10 per cent reduction in weight of these parts, but they constitute only about 25 per cent of the truck weight so the saving would be only 2.5 per cent of the total truck weight.

The long experience and careful attention to many details required for the construction of satisfactory modern passenger-car trucks is doubtless not generally appreciated. Take a typical four-wheel, single-bolster-type truck, for example. The cast-steel truck frame with integral pedestals meets definite strength requirements and has lateral stop blocks of rubber or composition material to give the truck bolster necessary lateral movement. The truck bolster and transom are arranged to accommodate stabilizers and vertical shock absorbers, also transverse shock absorbers in some instances.

Modern Facilities

Rubber-cushioned stay rods are used in place of bolster chafing plates to eliminate noise and wear at this point. Swing hangers of special steel, normalized and tempered, are forged from one piece without welding and fitted with accurately ground and hardened bushings. Sound-deadening inserts are applied with steel fillers in equalizer spring caps, swing-hanger bearings and center plates. A wearing disc of steel, rubber bonded, is provided for the center plate and, in conjunction with a composition plate ½ in. thick between the truck and body center plates, further insulates the car body from truck vibrations.

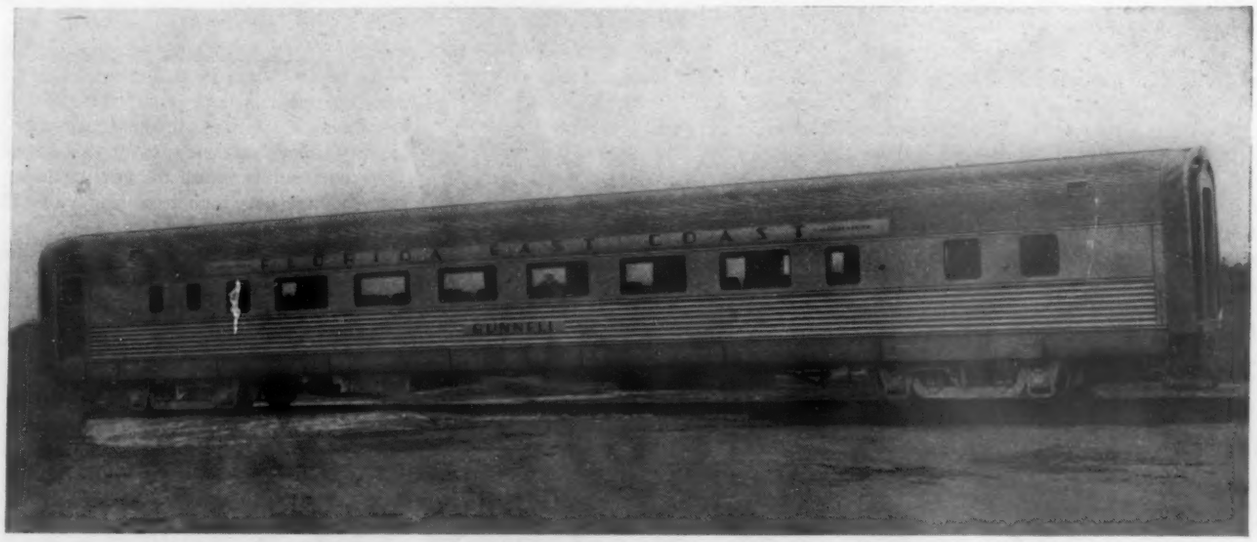
Special attention is given to equalizer design and physical properties. Side bearings are of the improved constant-contact spring type to contribute to smooth operation on curves and irregular track. A safety locking center pin holds the truck to the car in case of derailment.

Both wheels and axles are supplied to rigid specifications and roller bearings are installed in journal boxes with alloy-steel guide liners. Two brake cylinders per truck, with beam-type clasp brakes and an anti-rattling device, are part of the equipment. A wheel slip-control feature and one of the various types of hot-box alarm devices to give early warning in case of an over-heated bearing are becoming recognized features of high-speed passenger trucks. Experience is being accumulated with disc-type brakes which transfer braking effort from the wheel treads.

Construction Details

Various types of underframe, side frame, end and roof construction are available for passenger cars in accordance with the preference of individual roads. The sub-floor, which rests on the underframe members, and the corrugated arched metal flooring, usually applied with the corrugations crosswise and lightweight composition material covering the corrugations, is frequently made of aluminum to save weight. The manufacturers have developed an improved sealing coat which is required on top of the composition before application of the floor coverings. Corkboard floor insulation under a Monel metal pan with sides flashed up on the walls and suitable drains give good service in kitchens, pantries, lunch counters, etc. In this case, wood floor racks are used to cover walking areas.

Side skirts are applied to a great majority of new streamline cars to cover underneath equipment and give an improved appearance. They are definitely a mixed blessing, entailing considerable maintenance cost, interfering with the inspection and servicing of underneath



Budd-built stainless steel car for the Florida East Coast

Left — An American Car & Foundry car with anodized aluminum extrusion

Below — Building the car body. The insulation in place

equipment and, in cold climates, facilitating the accumulation of snow, ice and dirt under the car body. In general, these skirts curve inwardly from the side of the car and extend to within about 26 in. of the rails. They are applied the full length of the car except for cut-away sections at the trucks and have hinged sections to give access to underneath equipment. At least one transcontinental carrier has eliminated these skirts entirely on its streamline equipment.

Another feature of modern passenger cars, applied for appearance sake and desired streamline effect, is the outer closure or diaphragm between cars which also introduces considerable maintenance difficulties and expense. Vestibule diaphragms, generally installed with an improved type of suspension which has materially reduced diaphragm noise, have outer diaphragms of rubber or fabric of a color to match the exterior color scheme of the car.

Draft-gear improvements have kept pace with other advances in modern passenger-car construction and, in conjunction with A. A. R. tightlock couplers, permit inter-car movement and shocks to be effectively cushioned under all ordinary conditions. Free slack is eliminated by the coupler construction; light shocks, due to starting and stopping in normal operation, are cushioned by quick initial action of the draft gears, thus contributing greatly to passenger comfort; heavier shocks up to full draft-gear capacity are also absorbed and any shocks over that, as in cases of collision or derailment, passed into the underframe and car structure.

Noise reduction is an important objective from the passenger's standpoint and, in addition to sealed and better-insulated car bodies, the elimination of free slack in car connections is an essential requirement made possible by modern construction. Not only is coupler slack prevented in new car designs, but the buffer-plate mechanism is constructed so that it may be maintained without slack and diaphragms are spring supported at the top in such a way as to be always in contact.

Insulation

Insulating materials for use in passenger cars have been greatly improved and developed to meet the exacting requirements of this service. Insulation efficiency and desired acoustical properties are important requisites, also water and flame resistance and ability to stand vibration without disintegrating or getting out of place. Considerable progress has been made in reducing the weight of insulating materials, in line with modern requirements, and savings of over 1,000 lb. per car are by no means uncommon with standard 3-in. thickness and definitely increased insulating effect.

The insulation used in any particular car is generally reinforced with asbestos paper on one or both sides and held in place with galvanized steel wire through carlines for the roof and annealed nails spot-welded to the framing with the ends clinched over washers for the sides and ends. Adhesive drill tape is used between framing members and interior finish to prevent metallic contact. This material is also used between inside finish members where required for sound deadening. Ceiling air ducts are thoroughly insulated with ½-in. asbestos-covered insulation and the cooling pipes usually have 1-in. pipe insulation material covered with a seal fabric.

Interior finish, partitions, bulkheads and doors may be made of a variety of materials including stainless steel, aluminum, Plymetl, tempered Presdwood, etc. These materials lend themselves to more or less lightweight construction, are easily fabricated and may be applied in such a way as to give a highly-attractive appearance to the car interior. Each material has certain characteristics and advantages not possessed by the others and the decision regarding which to use in a specific

place depends upon how these advantages are evaluated on the individual road. As a matter of fact inside finish materials of different types are frequently combined in the same car to secure highly pleasing effects.

Windows

Windows in the modern passenger car are generally wide with the sash consisting of double-glazed metal sash with rounded corners, highly finished and set in the car frame by means of molded rubber gaskets. The window capping is frequently made of Formica which has a high-gloss finish in various attractive colors and is well adapted to resist wear and physical damage of all kinds.

Modern requirements seem to call for continuous luggage racks, built into the frieze finish, with provision for a light fixture over each seat with individual switch control. (Further details regarding lighting equipment, also air-conditioning facilities and their arrangement will be found in another article elsewhere in this issue.—EDITOR).

At the A. S. M. E. passenger-car symposium the need for uniform heating and cooling, ventilation, and humidity control was stressed. Humidity is a most difficult and as yet largely unsolved problem. Admitting that still further improvements are possible in heating equipment, which is the subject under discussion in this paragraph, the fact remains that continuous intensive research over a period of years has already produced a standard of heating in modern railway cars which makes them as comfortable as private homes or offices, a truly notable accomplishment under the adverse conditions of rapidly moving vehicles subject to frequent wind, temperature and other climatic changes.

Above—New revolving reclining-back seats for use in coaches

Heating Equipment

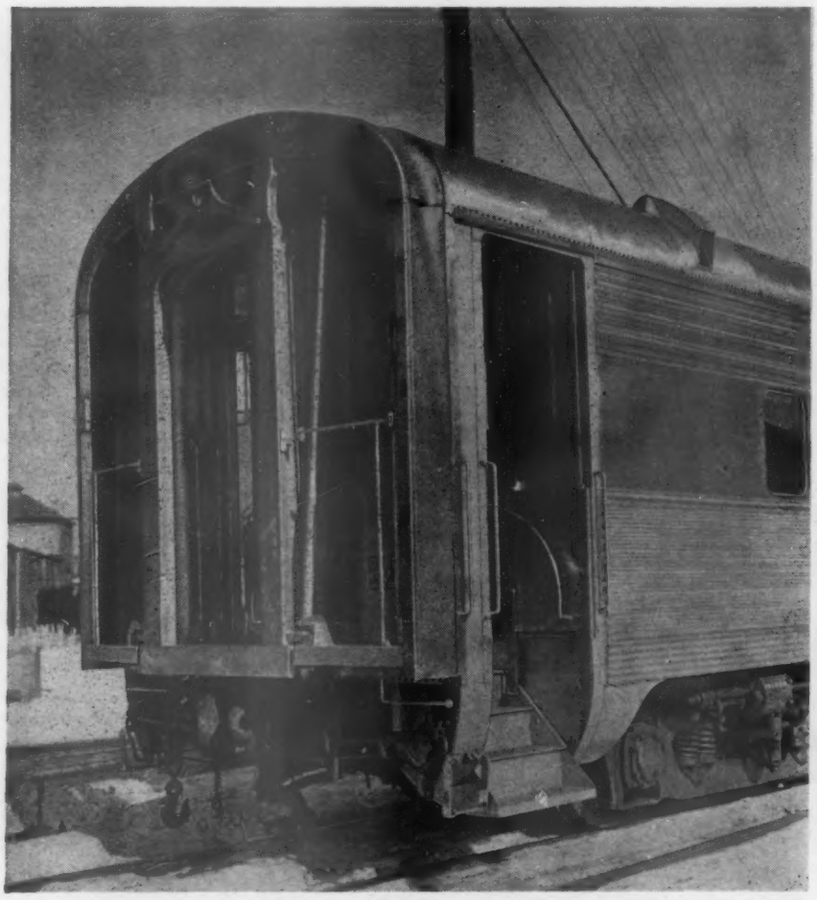
By providing adequate floor heat from efficient fin-type radiation units in modern cars, supplemented with ventilation and overhead heat from the air-conditioning unit, it is possible to maintain desired temperatures within close limits in the various passenger compartments and individual rooms by means of suitable highly developed control equipment. To prevent temperature variations in different rooms, between the ends and middle of a car, and between the two sides when one is subject to sun or cold wind conditions and the other is not, is a formidable task. Modern temperature-control equipment, however, takes account of all these differences with substantial success and produces a uniform temperature throughout each passenger compartment or room in accordance with individual preference.

Mechanically speaking, one of the most important factors in improved heating has been better insulation of cars and sealed windows which preclude undesired air leakage into the car at this point. Another thing has been the removal of restrictions in trainlines large enough to convey a supply of steam required to heat long trains. This also tends to deliver steam of better quality, reduce

Right—Current dining-car appointments accentuate the individual tables

condensate losses in the trainline, and assure dry steam for car heating.

Notable progress has been made in reducing the weight of steam-heat specialties and equipment in spite of the fact that larger trainline pipe and connectors (up to 2½ in.) unavoidably weigh much more than the relatively small sizes formerly used. The weight of radiation units was cut more than 50 per cent by the change from standard-pipe to steel fin-type units and still further reduced with copper-unit fin radiation. This saving, in conjunction with some reduction in weight of heating specialties, has reduced the total weight of steam heat equipment in the average coach about 50 per cent in the past decade.



Typical vestibule end and diaphragm construction

Brake System

For the safe and satisfactory operation of modern passenger trains, four features are generally considered desirable in air-brake equipment to make the shortest stops under all rail conditions. In the H. S. C. schedule, usually installed, speed governor control automatically proportions the braking force to the speed, giving maximum usable retardation at all speeds. Electro-pneumatic transmission has the effect of reducing brake application and release times and smooths the ride. An anti-wheel-slide device automatically reduces brake-cylinder pressure when wheels start to slide. An associated automatic sander delivers sand to the rails for a short period whenever increased adhesion is required.

As in the case of some other car specialty suppliers, the air brake manufacturers have already effected considerable weight savings in their equipment and are prepared to go further if railroads consider it economically justifiable. The use of lighter materials and refinements in design, for example, save somewhat over 10 per cent in the weight of present equipment and about as much more could be saved at some increase in cost. Still further savings are also apparently feasible if some way can be found to protect brake cylinders made of lightweight non-ferrous alloys from abrasion in service.

The marked difference in appearance between old and new passenger-car exteriors is exceeded only by changes in the interiors. Rich wall coverings, upholstery fabrics, carpets, color schemes, mirrors, murals, metal trim, window blinds, chairs and furniture are designed by experts for maximum appeal, both artistic and utilitarian. All carpets are generally laid over ¼-in. sponge-rubber padding or the equivalent. Rubber tiling is laid with felt paper and cemented in the usual manner.

For windows in coaches and other cars which do not have Venetian blinds, the general practice is to use composition or special fabric curtains with inside facings to harmonize with the interior color scheme of the car. Great improvements have been made in some of the curtain roller fixtures and operating mechanism, so that the curtains are now light proof, anti-rattling, easily-adjustable and positively assured of going up evenly, even when pushed with one hand at either end. Drapery materials at the side windows give an added home touch.

The revolving reclining-back seats of modern design for coaches, generously spaced for ample leg room, are not only attractively upholstered but designed to be as comfortable as the finest chairs in lounge cars. Rubber cushions were favored prior to the war and will no doubt again be widely used as soon as the necessary rubber supplies are available. For long over-night runs, an important new seat feature gives satisfactory full leg-rest support. This is particularly comfortable when the seat backs are in full reclining position. Loose lounge chairs and built-in sofa seats, extensively used in the lounges, are especially designed for passenger comfort.

Safety Appliances

Safety appliances receive a great deal of attention in modern passenger-car construction and are installed to meet the I. C. C. requirements. Where necessary, reinforcing plates are applied under hand-holds, roof grabs, ladder rests, etc., to assure ample strength for the connections. Tail gates and safety bars are installed, as required. Provision is made for the usual signal and marker lamps and one comparatively new feature is the use of a flashing red warning light on the rear of the train (also on the locomotive) which is normally inoperative but automatically turns on as soon as a service or emergency brake application is made, flashes its warning signal and remains in operation until turned off. For unit trains which require a back-up headlight, the headlight and red warning light are both built into the same case. Portable red warning lights are available for use on rear cars without observation ends and hence having no built-in rear warning lights.

Car Production Outlook Brightening

It won't be long now until daily output of manufacturers will reach $1,000,000 of cars per day

By S. M. FELTON
President, American Railway Car Institute

AMERICAN railways and the railway car building industry now have an opportunity to speed passenger carrying progress at a record pace. We have learned how the hard way, through the lean years of depression and the hightest years of war.

During the earlier period, and in spite of railway budget difficulties, we learned how to build better and faster trains; and we learned that their operation brought about larger passenger revenues and new economies in operation. The war added its lessons about moving huge passenger volume; at peak, at more than four times the average passenger-miles of the prewar years. This was not done without passenger discomfort—but, the passengers knew that the railroads were delivering miracles.

In another sense, the depression and war years—a decade and a half of them—created the present opportunity, because these were very low years in passenger car building. On the average, less than 200 new cars were installed annually, according to Association of American Railroad's figures.

We now *must* replace existing passenger cars at a high rate and I cannot believe that conceptions of national policy will be so short-sighted as to permit financial strangulation of the railroads at this critical period. The industry should be assured sound financial foundations. Then we can get ahead, and quickly, with large-scale building of modern passenger equipment.

Old Cars Need Replacing

This must be done for two very sound reasons: first, because so much of the present equipment is so old; and, second, in order to meet the competition of other forms of transportation. Real merchandising requires good merchandise.

Of passenger train cars owed by Class I Railroads, as of January 1, last, 15 per cent had served for 35 years or more; 38 per cent were over 30; and nearly half—or, 47 per cent, 18,500 cars—were more than 25 years old.

As noted in the recent report of the Car Department Officers Association, "A large volume of new cars must be purchased at an early date to replace obsolete equipment which will have to be retired shortly." It is significant that this group also submits plans for complete or partial modernization of 14,000 cars; and, obviously, this is *precisely because* of the need for new keynotes in appearance, comfort and services—to meet air and bus competition.

Considering the difficult position of the railroads during the decade before war broke upon us—a net of only about $200,000,000 for all Class 1 Railroads, and a loss of about $350,000,000 for those of the western district—a very good modern equipment start had been made. Only a few years intervened between the era of the "City of Salina" and the "Pioneer Zephyr," and the stoppage of all passenger car building during the war. Still, more than 2,000 light-weight streamlined passenger cars had been built and installed in hundreds of new-type trains in many parts of the country. *Of course,* they won immediate public popularity; they added sparkle and speed to rail travel. A trip on a train became a new kind of adventure.

They Earn a Profit

It is worth remembering now, too, that the pioneering streamliners were showing surprising black ink entries. Some literally paid for themselves in eighteen months; others, in two or three years. They also created new traffic. I have in mind a group of roads. One bought a single train—sort of experimentally—then quickly added five more, and the others followed suit. Those trains literally made Florida a year-around resort. It is obvious also that each of these trains became a front-page advertisement for its owners: they made friends and influenced people.

We have made a pretty good re-start now, considering all the difficulties of the first post-war year. The car building industry on October 1 had 2,659 modern light-weight streamlined cars on order. The total was above 2,800, including a few to be built in railway shops. That figure is more than the total built during the years 1934-42.

That's at least 400 new speed-trains of the kind the traveling public wants—and demands.

That seems to me to emphasize a point recently made by Gustav Metzman, president of the New York Central, when he declared that American railroads now are gambling; they *are* re-equipping, they *are* modernizing, they *are* preparing to provide the finer, more efficient transportation America needs.

This finer, faster transportation will include "astra-dome" and "vista-dome" trains. There will be new through sleepers which will be traveling hotels, in the completeness of their appointments. Coach trains are planned and building which will be club-houses on wheels. Travel will be a new and thrilling experience.

For the car builders I am happy to be able to report that it won't be long now before the most modern "glamor trains" will be rolling out of shops and into swift service at the rate of about a million dollars worth of cars daily.

And, we look upon that as only the small beginning of a very big opportunity to help revolutionize railway passenger service in this country.

There is no saturation point in passenger travel now that the railroads and the car builders are combining their know-how and their imaginations in making service swifter and more luxurious. Repeatedly, this has been proved during the last decade as glamor trains tripled or quadrupled traffic on various lines. That is why I say that for us, today, *the ceiling is unlimited.*

A Job for Business

"We have come to a critical time in the business history of our country. We have won a war and won it largely through the genius of American business. Thinking people at every level in business were responsible for that victory. Now we have an even greater job to do. You may call it winning the peace, or you may call it the preservation of the American way of life. Whatever we call it, I believe we all have substantially the same thing in mind. That is to make certain we the people, all of us, shall have a richer, a fuller, a better life in the years to come. We want those who follow us to scale the heights that we can only begin to perceive down the long road that lies ahead. We in business have both opportunity and responsibility for the future. We desperately need thinking people in every line."
—Wayne A. Johnston, president of the Illinois Central.

About 65 per cent of the passenger equipment is 20 years old or older

Passenger Cars Have High Average Age

At approximately 25 years, a large portion of the passenger-train rolling stock must be replaced or rebuilt to satisfy popular demands for comfort and convenience

PASSENGER train cars, from the back locomotive coupler to the rear-end signals, have an average age which indicates that a large proportion of the equipment is obsolete. This fact is known to the railroads by their records and to the traveling public through its sufferance of this out-of-date equipment during the past several years of heavy passenger traffic when the building of passenger cars was restricted. As of January 1, 1946, over 65 per cent of the cars were more than 20 years old; less than 5 per cent were under 5 years of age. During this year, to September 1, only new sleeping cars and coaches were delivered in quantities sufficient to affect more than slightly the average age of any of the car types and even these installations were not of a magnitude to make more than a large dent in what needs to be done. While considerable numbers of all the various types are on order the general status of materials and labor makes the delivery of much of this equipment uncertain. Furthermore, the new orders for passenger equipment have been affected adversely by the drop in net earnings to such an extent that a large number of cars that should be retired will remain in service until a more favorable financial situation exists.

What is the average age of each type of car? In general the number of cars of each type in the various age groups, coincides very closely with the age pattern of passenger-train cars as a single classification. Based on the dates the cars were built originally, at least 70 per cent of the cars of each type are more than 16 years old. This situation could be expected since the past 16 years were either depression years, when both the funds and the demand for new equipment were at a low ebb, or war years, when restrictions on the building of new equipment precluded the acquisition of passenger-carrying cars suitable for peacetime needs.

Coaches

In reviewing the status of present equipment one of the saddest pictures is presented by the coach and coach combination groups which had an average age of approximately 27 years at the beginning of this year. Up to October 1 only 228 new coaches had been installed in 1946 and at that date there were 751 coaches and 57 coach combinations on order; 75 cars in both groups were retired by destruction or dismantling during this year. The 1,036 coaches and coach combinations on order and delivered during the year up to October 1 is less than 6 per cent of the total numer of coaches owned by the Class I railroads.

With approximately 53 per cent of the two types of cars in the more than 26-year-old groups it is obvious that a large number of these cars need to be replaced if the railroads are to meet effectively the competition for passenger business. Although the greater proportion of the older equipment is in local and short-haul service it is on those runs that most of the railroad passengers get their impression of how well the railroads are providing their customers with comfort.

Sleeping Cars

With the exception of coaches the sleeping car is the most important unit with respect to its influence on what the traveling public thinks of railroad passenger service. Like the coach situation, too, more than 80 per cent of the sleeping cars are over 16 years of age on the basis of the dates they were built originally. Of the 2,846 sleeping cars under six years of age, 2,390 were troop sleepers and are not shown in the accompanying table, and 391 are tourist sleepers. Through September 822 new sleeping cars were installed in 1946 and six were retired by destruction or dismantling in the same period. There were 795 sleeping cars on order on September 31, 1946. Both sleeping and sleeping combination cars are included in the data referred to as sleeping cars.

The 1,617 new sleeping and sleeping combination cars delivered and on order is about 29 per cent of the cars over 16 years of age and is an indication that the railroads are doing something about the need for better sleeping accommodations. As the 822 new cars placed in service far exceeded those retired, it may be assumed that the new equipment

is needed to furnish capacity to take care of the demand for which no cars were available before the new cars were built. When the sleeping cars on order are delivered and added to those placed in service in 1946 the total will equal in number the cars that are over 31 years of age and, based on the same capacity, they could replace that age group under normal traffic conditions. There would still remain, however, about 4,000 sleeping cars over 16 years old which do not compare favorably in conveniences or comfort with sleeping-car designs such as the roomette cars developed in the last decade.

Luxury Cars

The parlor, club and observation types, totalling 633, are the least numerous of any of the passenger-carrying cars and their ages reflect very definitely the economic situation of the period within which they were built. About 70 per cent of them are more than 16 years old. Of these 292 or 46 per cent were installed in the 20's, 7 were built during World War I, and 152 or approximately 24 per cent were placed in service prior to 1915. Only 26 were built from 1930 to 1935 and 126 were constructed in about equal numbers per year between 1936 and 1940, inclusive. Those cars built in the past ten years were for the most part designed for service in special trains, such as the streamliners, that have been inaugurated during that period. It is probable that most new cars of the luxury type will continue to be designed to match the outward characteristics and interior appointments of specific trains.

During 1946 a total of only 18 new cars were installed up to the first of October, but there are 192 cars on order at the builders' shops. When the latter are placed in service the 210 new parlor, club, lounge and observation cars will exceed by 22 units the number of cars of these types that were built in any previous five-year period. As there are 159 cars which are over 26 years of age the new equipment will outnumber that age group by 51 units. Being approximately one-third of the total inventory of these cars, the new equipment will make a substantial improvement in the quality and availability of those cars that permit railroad pssengers to enjoy the special services not available in competing forms of transportation.

Dining Cars

During the war years necessity forced the railroads to utilize every piece of serviceable dining equipment and the traveling public ate their meals uncomplainingly in dining and dining combination cars that were both uninviting in appearance and obsolete in design. About 85 per cent of that equipment is over 16 years old; 814 of the cars, or slightly more than 50 per cent, were built during the 20's, and the other 35 per cent, or 551 cars, are more than 26 years old, the greatest proportion of the latter having been built between 1910 and 1915. All of the 50 cars installed in the past five years were placed in service in 1941 and 1942; none was constructed since 1942 and only two were delivered this year up to the first of October.

That the railroads are aware of the inadequacy of the dining-service cars is shown by the 316 units which were on order on September 30 of this year. When it is realized that 128 dining cars is the largest number of these cars ever placed in service in any one year it is evident that 1947 will be an outstanding year with respect to the improvement in dining equipment.

Head-End Equipment

While the percentage of postal and postal combination cars over 16 years old is the highest of any passenger-train car type, the baggage and express cars are an exception to the general age pattern with about 4,000 cars, or 30 per cent, constructed since 1940. With 95 per cent of the postal cars being over 16 years old and approximately 35 per cent in the 31-to-35-year age group this type of car should be one of the passenger-train car types in need of replacement. The baggage and express cars, having about 85 per cent built since 1916, and 30 per cent since 1930, are in better shape when compared to other car types on the basis of age.

The orders for cars of these two types show that the railroads are concentrating mainly on the improvement of the passenger-carrying equipment. Only two new postal cars have been built in 1946 up to the first of October and 53 baggage and express cars were installed in the same period. On September 30 there were 76 postal cars and 168 baggage and express cars on order, so the total of the former type on order and delivered is about two and one-half per cent of the total inventory of that class and that of the latter type is less than two per cent. The new equipment will have little effect in lowering the average age of about 27 years for postal cars

Table I—Ages of Passenger Train Equipment

Class I Railroads—United States—January 1, 1946

Ages of cars, years	Postal and postal combination	Baggage and express	Coach combination	Coach	Sleeping and sleeping combination	Parlor, club, observation, etc.	Dining
1–5	41	420	19	319	456	30	50
6–10	80	1,485	99	750	488	126	160
11–15	38	1,977	89	523	115	26	27
16–20	664	1,127	541	3,634	1,335	188	450
21–25	510	2,561	349	3,210	1,653	104	364
26–30	357	3,529	240	1,637	1,012	7	134
31–35	1,142	495	713	4,900	1,569	107	306
36–40	289	519	328	2,196	...	29	96
41–45	47	979	133	328	1	12	13
Over 45	37	235	89	88	24	4	2
Total	3,205	13,327	2,600	17,585	6,652	633	1,602

Nearly 40 per cent of the coaches owned by Class I railroads were built in the 1920's

and 24 years for baggage and express cars.

Orders Vary with Revenue

A committee report of the Car Department Officers Association presented at the annual meeting of that association in September of this year discussed the retirement and rebuilding of passenger-train equipment.* In reference to the retirement of obsolete passenger cars the committee said, "The question of retirement cannot be governed by any hard and fast rule or age limit which will automatically place passenger cars on a retirement program, as a number of things have to be taken into consideration before cars can be relieved from service. One of these is the financial picture. In other words, when business conditions are good, railroads are in a position to relieve older equipment more readily than during more trying times. In the less fortunate periods, therefore, we find cars in service which have considerable age and should be retired, but must be kept in service.

"Another outstanding feature covering retirement is that of a conversion period such as we have at present when public demands require the replacement of older equipment with new and improved modern types. One of the outstanding examples of this was the creation of the streamliner type of train which was brought forth after the last war and in many cases eliminated conventional equipment which still had many years of service left."

The committee also considered the life of a car for main-line and major suburban service to be approximately 30 years. However, the committee pointed out that in a conversion period such as we have now the public demand for new and improved car types is responsible for the retirement of cars while they still have many years of service left. Developments in car design make the cars obsolete before they are worn out.

The truth of the committee's statement that old equipment is replaced by new cars when times are good is shown by a review of the number of cars in the various age groups. These data also reflects the influence of the national emergencies on the construction of new equipment. During the depression years of the 1930's and the World War II period only slightly more than 12 per cent of the total Class I railroad-owned passenger cars were installed and 11 per cent of the Pullman cars were placed in service. When times were good, from 1920 to 1929, 41 per cent of the passenger cars and 48 per cent of the Pullman were built. In the age group in which the years of World War I are included about nine per cent of the passenger cars and 16 per cent of the Pullmans were built. In the age group 1916 the largest number of passenger cars owned by the Class I railroads, over 38 per cent, and next to the greatest number of Pullmans, 24.55 per cent, were placed in service, with the construction date of individual cars ranging back to before 1900. However, the oldest large group of passenger cars was introduced in 1910 when over 2,000 cars, not yet retired, were built.

Table II—Passenger Equipment on Order October 1, 1946*

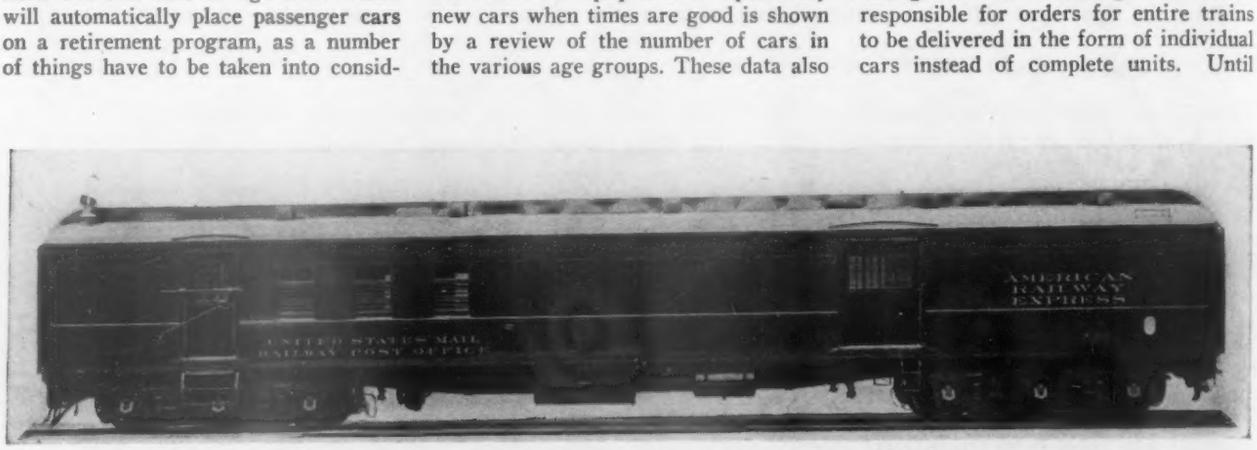
	Car builders	Railroad shops
Postal and Postal Combination	76	..
Baggage and Express	164	4
Coach Combination	52	5
Coach	681	70
Sleeping and Sleeping Combination	795	..
Parlor, Club Observation, etc.	192	..
Dining and Dining Combination	301	15
Other	27	..
Total	2,288	94

** Preliminary figures from A. A. R. reports; November 1 figures appear in the article on page 797.*

New and Modernized Equipment

Most of the new passenger cars delivered and on order are operating or will operate in "name" trains. There are approximately 2,500 cars of all types on order and about 2,200 have been delivered in 1946 to the first of September.

The new cars are being built under the handicaps of material shortages and labor strikes which have set back the delivery schedules from a few weeks to a year and which have made actual delivery dates unpredictable. No one material item has caused the delays in delivery. They have resulted from shortages in both basic materials, such as steel and aluminum, and finished products varying from special screws for car interiors to refrigerators for dining cars. The shortages have been responsible for orders for entire trains to be delivered in the form of individual cars instead of complete units. Until more normal production is attained in all of the industries supplying the materials and specialties required for finished passenger equipment the scheduling of passenger cars will continue to be uncertain.



Postal and postal combination cars have an average age of 27 years

Modernization

The committee of the Car Department Officers' Association reporting on the retirement and rebuilding of passenger-car equipment estimated that 2,000 cars will be modernized completely, 12,000 will be partially modernized and 19,000 will receive scheduled maintenance only. This committee itemized in its report the work required to rehabilitate the car equipment on the basis of complete and partial modernization and of being made serviceable, by maintenance only, for five years or less.

In concluding its report the committee expressed the opinion that "The conventional passenger car should be maintained as befits its condition rather than its age, its construction rather than its weight, and finally its cost of rehabilitation as against the cost of a new car." Under those conditions the decision on replacement or rebuilding can only be made by each railroad which has the facts about the condition of its equipment and the needs of its passenger traffic.

Car Air Conditioning and Lighting

Refined techniques and new equipment recently made available can be used to establish new standards of excellence for railway passenger car interiors

QUALITY air conditioning and good lighting have become primary factors in passenger car requirements. Both have really come into their own in the past fifteen years, a period including a depression and a war. Practically nothing was installed during the war period. The present demand for new equipment is therefore large, and, fortunately, greatly improved apparatus is being made available by the builders and manufacturers.

Power Generation

Growing electrical demands on railway passenger cars have caused the railways to use constantly increasing sizes of electric generators: Starting with sizes of one to five kilowatts for lighting alone, with the power developed from an axle drive, the sizes have increased to 20 and 25 kw. Electrical men believe that 30 kw. is the maximum which can satisfactorily be taken from an axle. It is possible to use two generators operating in parallel, but larger sizes, it is felt, would take too great a part of the locomotive output.

Power may also be developed by means of internal combustion engines, and when these are used to drive electric generators, the generators can be considerably smaller than an axle-driven machine doing the same work, since the engine can be made to run continuously. Engines using propane as fuel are used to drive compressors or to drive generators and about ten per cent of the air conditioned cars now in service are cooled by means of such engines. Engine generators and ice engines using propane as a fuel have recently been improved to include Stellite faced exhaust valves and exhaust valves and exhaust seat inserts, "porous chrome" plated compression rings on the pistons, larger magnetos and higher capacity starting windings on the generator, more rugged cooling fan with sealed-in lubricating chamber, improved radiator, larger air cleaner with a pre-cleaner, unit fuel cabinets which will accommodate from one to six cylinders and a sub-collar made more quickly responsive to load demands.

Larger Diesel engines can be used to supply all the needs of a car, including lighting, cooling and heating, the heat being derived from a combination of electric heaters and engine jacket water. Two new engine-driven generators for this purpose have just been brought out, and one railroad has for several years operated a train which is so equipped.

A few trains employ power cars containing several Diesel-electric generator sets which supply all power requirements of the train. This makes a highly satisfactory source of power with no added load on the locomotive except the power required to haul the car. It is believed by some that as power demands grow, head-end power will be the only practicable method to use, and figures have been compiled to show it is lowest in cost, lighter in weight and less complicated than any other system. The principal difficulty facing its adoption is that, if cars are to be used in interchange, connectors, voltages, arrangements of circuits, etc., must all be identical.

Axle-driven generators, operated in conjunction with storage batteries continue to supply most of the passenger car power requirements. Both flat and multiple V-belts are used to drive machines of 10 kw. and smaller sizes. Gear drives have proved emminently satisfactory for the larger generators. There are now more than 4000 gear drives in service and on order. They are used by about 40 railroads and a number of the drives have been in operation for 1,000,000 miles without major repairs. A new model recently developed is capable of driving 30 and 35 kw. generators. Manufacturers of generators are now making them in 25 and 35 kw. sizes.

Within the past few weeks, a new rival of the gear drive has appeared in the form of a V-belt gear drive using endless belts with no fasteners. The belts are expected to run through several wheel turnings, and when they need replacement they are slipped on and off the axle pulley over one wheel at the time the axle is removed from the truck for wheel turning. The endless belt used with this drive will be shorter than those on the drives using fasteners, and it is expected that belt life will be at least doubled. The maker of this drive has also introduced an improved one-inch V-belt for body suspended generators.

Another manufacturer is offering 2-in. cog V-belts in 152-ft. rolls which may be kept in the storeroom and cut to length. Similarly 1-in. belts are made in 500- and 600-ft. rolls.

During the war, to conserve rubber, it was necessary to furnish lead-acid storage batteries in individual hard rubber jars assembled in wood trays. It is expected now that within a matter of months all regular sizes will again be furnished in monobloc containers.

Makers of both nickel-iron-alkaline and lead-acid batteries anticipate the adoption of higher-voltage batteries. It is also expected that passenger car power plants will be designed with a more careful analysis of loads, generator capacities, drive ratios and other factors.

The nickel-cadmium-alkaline battery, which has been in service in Europe for a number of years, has recently been introduced in this country.

Some of the advantages claimed for this battery include long life, low-operating cost, low internal resistance, permissible high discharge rates, immunity to high temperature and freedom from damage caused by standing in a discharged state.

Power Conversion

One of several new power conversion devices recently made available is the amplidyne booster inverter. It is an inverted converter (synchrononis converter running from the d. c. side) with an amplidyne mounted on the same shaft. The amplidyne is connected in series with the inverter and boosts or bucks the voltage supplied by the axle generator or battery to maintain approximately constant a. c. voltage and frequency on the output side of the inverter. One railroad is installing 300 such units to supply alternating current on cars for all electrical load except the air-conditioning compressor motor. The compressor has a dual a. c.-d. c. motor and when plugged in on standby power, the compressor is driven by the a. c. motor and the d. c. unit, running as a generator, supplies current for charging the battery. Also for supplying a. c. power, motor alternators are being made in 5 kw. sizes.

Another new conversion device is a variable-voltage, variable frequency rotating type inverted converter for application where fluorescent lighting and

razor outlets are the only devices that require a. c. power on the car.

Several new vibrating types of conversion apparatus have also been developed. One of these, designed to power radio transmitters and receivers, operates from d. c. over a range of 56 to 80 volts and supplies d. c. power up to 300 milliamperes at 320 or other voltages.

Another unit utilizes a nominal input of 64 volts d. c. and delivers 117 volts a. c. at 165 watts average. To supply 110 volts a. c. for electric razors there are vibrating units which operate either from 32 or 64 volts d. c. Their rated capacity is 40 watts.

If the present demands for high quality air conditioning are to be met in the cooling season, either with or without reheat, the importance of variable load compressors and split evaporators for electro-mechanical systems is generally recognized. Several types of such equipment are available.

Railroad users have expressed a wish for sealed-type compressors driven by a. c. motors which could derive their power from an inverter or an engine-driven generator, but the manufacturers state that it is difficult to produce an 8-ton unit which will not have trouble caused by a mixture of oil and freon attacking the motor insulation.

V-belts for motor-driven compressors which have wire reinforcements are being tried out.

For those who prefer stream-ejector air conditioning, inside-of-the-car vertically mounted equipment has been made available.

A number of refinements for the control of both heating and cooling of passenger cars are being made available.

One system of heating being applied to cars includes both floor heat and overhead heat, with the floor heat piping in the car divided into zones. This is done because a car is a long narrow body which is influenced in varying ways by end door openings, sun and shade, and varying passenger preferences that require separate recognition. Separate thermostats are placed on each side of the car to compensate for sun effect or wind. Other thermostats on the ends of the car compensate for the admission of cold air when doors are opened in the winter. The men's smoking room is maintained at a temperature about 2 deg. lower than the body of the car and the women's lounge 2 deg. higher.

Overhead heat is introduced into the car about 2 deg. cooler than the setting of floor thermostats so that the overhead heat filters into car and avoids stratification because it is cool enough to settle through the rising floor heat.

The use of reheat to control humidity is contemplated in some of the latest proposals. This in combination with a split evaporator and an unloading or two-speed compressor can produce a comfortable car under all conditions of outside temperature or humidity. Train steam lines have been increased to 2½-in. to permit heating of longer trains with lower pressures.

Another improvement being offered is a fully automatic master selector panel which without any attendance by the train crew, sets up the car for heating, cooling or ventilation conditions as they are dictated by outside weather. The control system can also be arranged to permit the coach-sleeper to be operated at a higher temperature during the night

Left—Lighting is an essential to a beautiful interior

Below — In a lounge car lighting must provide both the decoration and reading comfort

than during the day. Other facilities permit the floor heat to come on in steps rather than fully off or on.

An electronic temperature control, just being introduced, consists basically of a wheatstone bridge in which one leg functions as a resistance thermostat. Changes in temperature cause the thermostat to change its resistance and unbalance the bridge. This unbalance effects electronic tubes which in turn cause a motor to operate the control apparatus. The same system offers a number of other refinements which compensate for a variety of varying conditions inside and outside the car. It also includes side wall panel heating to compensate for heat transfer through the side wall and thereby equalize temperatures between window and aisle seats, a heat transfer system which transfers heat from steam to a circulating system using a non-freezing medium which distributes heat evenly.

Filters

Oiled type and dry throw-away type filters continue to supply most of car filter requirements, and these have been improved both by better design and manufacture and by improved maintenance methods and facilities. They are now faced with competition in the form of three makes of electronic filters. This type will remove dirt particles of extremely small size from the air stream, down to and including tobacco smoke. It has also been discovered that the air they pass is sterile (free of bacteria). Another method of disposing of airborne bacteria is the sterilamp which has been applied to a few cars.

Several types of liquid deodorants have been tried in cars, but according to a recent report of a railroad committee, these have all been of either the "perfumed" masking type or the desensitizing type that deaden the olfactory nerves, thereby affecting the sense of smell. Several other devices have been produced to eliminate odors through the process of "ozonating" or "ionizing" the air. The committee report states that these methods appeared to aid in the control of odors, but they are not producing the effectiveness necessary, and desirable.

Railroad air conditioning engineers generally recognize the fact that the most effective means of odor control is to keep evaporators and ducts clean and provide adequate ventilation. The amount of ventilation possible is, however, limited by the cooling capacity of the air conditioning system.

The usual amount of air replacement is much more than is needed for oxygen replenishment, but the need is for air that is free of odors. Air purification by filtration through activated carbon will effectively eliminate odors. This method is now in use on several hundred cars of various types.

Lighting

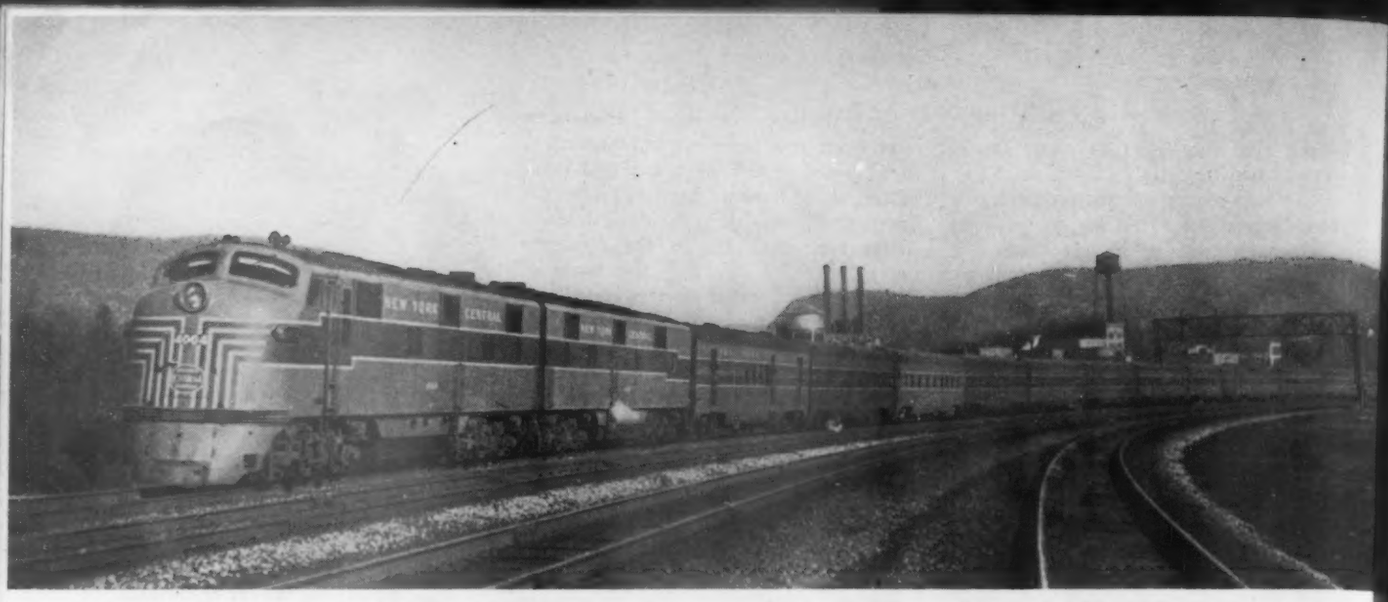
Lighting continues to be an increasingly important means not only of providing adequate and well distributed illumination for reading comfort, but also a means of emphasizing the beauty of the car interior and of functioning itself as a decorative medium. Fluorescent lighting, which is inherently well-suited to passenger car interiors, continues to displace incandescent lighting. Several new light sources have been developed. One of these is the 4500 white fluorescent lamp, the color of which is between the 3500 deg. white and the daylight lamp. It is felt that this generally will make for a more pleasing interior and will more accurately display the color of fabrics and decorations. Other additions are the instant-starting lamps, the slimline lamps in 42, 64, 72 and 96-in. lengths and the circline lamps made in circles of three sizes.

New lighting units which have been made available include various types of fluorescent enclosures for individual units or strip lighting, louvered units for both types of application, and a great variety of both incandescent and fluorescent units for room cars, passageways, etc. One installation makes a novel use of louverglas (plastic with molded-in louvers) in which a continuous light source is run down each side of the car just above the windows. Other new lighting units employ magnifying glass prisms which accurately distribute the light to the reading plane. There are also aisle lights which project a narrow high-intensity beam of light to the width of the aisle without extending into the passenger area. Special night lights provide for both room car and coach comfort and convenience. Block shaped prism-lens glass units for ceiling mounting used in diners with incandescent lamps serve to project high-intensity light downward in overlapping narrow cones of light to give sparkle to table ware without making the diner aware of the light source. Snap-in plastic diffusers facilitate cleaning and lamp replacement.

These are a few examples of lighting units which are constantly being revised and tailored to meet the lighting and decoration requirements of the car interior.

Standby power facilities in which 3-phase, 220-volt a. c. can be supplied directly to the car or through the mobile battery charging set to supply d. c.

Modern coaches give the passenger much more than did the luxury cars of a few years ago



The General Motors 4,000-hp. Diesels hauling the Twentieth Century Limited are attaining monthly mileages approaching 29,000

Passenger Power Is Undergoing Peacetime Road Tests

SOMEONE has coined the phrase "the year of decision" and while we are not able, at the moment, to trace its original application it may be so aptly applied to the whole question of passenger motive power that we are going to suggest the possibility of the next 12 months' developing some surprising decisions. All during the war years the railroads were faced with the dire necessity of operating passenger trains handling the greatest amount of passenger traffic in their history; and, from the standpoint of motive power, when and where they could and running it as long as safety would permit. When railroads use 88 per cent of the power assigned to passenger service and have as few as 95 out of a total of over 6,800 locomotives in storage and only 850 in the shop it is not only a record that will probably stand for a long time to come but it is approaching a maximum physical possibility.

High-Mileage Locomotives

Now, with the return to peacetime traffic, the roads are again approaching a period when they can concentrate on working out new ideas and refinements of existing ideas as well as the development of comparative cost statistics as a guide to future operations. If there is one thing that the handling of passenger traffic under pressure has taught the motive power and operating men it is the value of the Diesel-electric locomotive and the modern high-capacity steam unit as a train-hauling facility which can operate over long distances at monthly mileages of from 25,000 to 32,000. When locomotives run up such mileages as these—whether they be steam or Diesel—they are not only establishing new records for utilization but are exerting a profound influence on the character of servicing and maintenance facilities and upon the methods of handling the power at shop and terminal.

All of this has been done up to this time without too much of an opportunity of studying costs and, as a result, many conflicting figures have been made public and developed by the different railroads which, in many cases, have only served to create confusion with respect to a railroad facility—modern motive power—that the experience of every-day service proves is the key to economical operation in the fture. So it is to the credit of the railroads that they are losing no time, now that some of the pressure is off, in setting up the machinery for finding out, in detail, just what the cost of operating the various types of power really is. One large railroad established, on October 1 of this year, a special system of accounts for developing the comparative costs of six modern high-capacity steam passenger locomotives and six Diesel-electric locomotives operating on fast main-line schedules with runs approaching 1,000 miles a day for each locomotive. There are, no doubt, many railroads that have similar road-service cost studies in mind so that we may look forward, in the next year or two, to the answers to many of the questions that have been left up in the air since Diesel power first entered the picture.

Use of Diesel Growing

It is putting it mildly to say that the use of the Diesel-electric locomotive for passenger service is being rapidly extended. With minor exceptions there haven't been any thing else but Diesels ordered for use in passenger service. As of December 31, 1945, 28 roads had 503 Diesel units of 2,000 hp. or less operating in passenger or combination freight and passenger service. Since the first of this year 62 more road passenger locomotives of 1,500 or 2,000 horsepower have been ordered from the four builders of this type of power. Of still more interest is the fact that these 28 railroads are operating approximately 150 of their crack trains either partly or entirely with Diesel power. Elsewhere in this issue may be found a tabulation of the streamliners, most of which are handled by Diesel power.

New Type of Diesel Power

During the past year four new designs of road Diesel-electric locomotives have appeared on the scene. All of these four new designs are combination passenger and freight locomotives and may be adapted to either class of service by variations in traction-motor gear ratios. The four new designs are the American Locomotive-General Electric

One of the latest additions to the Diesel fleet is the Alco-G.E. three-unit 6,000-hp. locomotive

6,000-hp. locomotive, the first of which was recently delivered to the Santa Fe; the Baldwin 3,000-hp. single-cab locomotive built for the Seaboard; the Fairbanks-Morse 3-unit, 6,000-hp. locomotive delivered to the Union Pacific and the General Motors F-3 which develops 1,500 hp. per cab unit and is used, in passenger service, in both two and three cab-unit combinations.

The Alco-GE locomotive is powered by a 16-cylinder, V-type, supercharged Diesel engine having 9-in. by 10½-in. cylinders and developing 2,000 hp. at 1,000 r.p.m. Each of the three units—two A units and one B unit—has an over-all length of 66 ft. 2 in. with a unit wheel base of 49 ft. 8 in. Each A unit weighs 306,000 lb. and the B unit, 300,000 lb. With two six-wheel trucks the axle loading of the A unit is 51,000 lb. With a 58:25 traction motor gear ratio this locomotive has a maximum speed of 117 m.p.h. and a continuous tractive force rating of 24,000 lb. at 25.5 m.p.h. The over-all length of the 6,000-hp. locomotive is 195 ft. 4 in.

The 3,000-hp. single-cab locomotive built by Baldwin for the Seaboard was actually designed for heavy fast-freight service but is mentioned here because it is a design developed around the well-known electric-locomotive running gear in which there are two four-wheel engine trucks and an eight-axle articulated driving-wheel arrangement. This locomotive is powered by two 1,500-hp. eight-cylinder, supercharged Diesel engines developing their rated horsepower at 625 r.p.m. The over-all length of the A unit is 91 ft. 6 in. and the axle loading is 51,250 lb. The total weight of the locomotive in working order is 577,200 lb. The continuous tractive-force rating at 20.5 m.p.h. is 45,300 lb. This locomotive is capable of 117 m.p.h. and can haul approximately 1,300 tons on level tangent track at 60 m.p.h.

The Fairbanks-Morse 6,000-hp. three-unit locomotive is powered by a 10-cylinder, two-cycle opposed-piston engine having cylinders of 8⅛ in. bore by 20 in. stroke. The gross engine horsepower is 2,100 and the net horsepower to the generators is 2,000. The weight of the three units, in working order, is 1,005,600 lb. and the over-all length, 194 ft. 6 in. The locomotive is designed for a maximum speed of 102 m.p.h. and has a continuous tractive force rating of 83,000 lb. at 23 m.p.h.

The General Motors Class F-3 locomotive is designed for speeds of 98 m.p.h. in passenger service and is powered by a 16-cylinder, V-type, two-cycle Diesel engine having 8-in. by 10-in. cylinders and developing 1,500 hp. at 800 r.p.m. The locomotive is designed with A and B units which may be used in combinations of two, three or four units. The total weight, in working order, of an A or B unit is 230,000 lb. The length over couplers of the A unit is 50 ft. 8 in. and of the B unit 50 ft. 0 in. The axle loading of the F-3 locomotive is 57,500 lb., each unit being carried on two four-wheel trucks. The maximum speed of this locomotive is 98 m.p.h. with 57:20 traction-motor gear ratio and the continuous rating of each 1,500-hp. unit is 22,500 lb. at 20.5 m.p.h. The most common combinations of the F-3 for passenger service are the two- and three-unit combinations. The two-unit, 3,000-hp. locomotive can handle a train of approximately 800 tons on level tangent track at 80 m.p.h. and the three-unit, 4,500-hp. locomotive can handle approximately 1,200 tons on level tangent track at the same speed.

The two tables accompanying this article show the statistics of passenger motive power and its performance. We are fortunate, in Table II, in being able to present for the first time a breakdown, for the years 1945 and 1946, of the number of locomotives assigned to passenger service by type of power. Some idea of the changing character of passenger motive power may be drawn from the locomotive situation in July, 1939, at which time there were 7,730 locomotives assigned to passenger service, 5,398, or 69.9 per cent, of which were actively engaged in handling passenger traffic. It is interesting to note that, in that month, there were 1,858 unserviceable locomotives in or awaiting shop and 473 units stored in serviceable condition.

Some indication of the utilization of motive power at that time is seen in the average of 186.4 miles per active locomotive per day. From the low point of July, 1939 (in so far as the percentage of active locomotives to total is concerned), the advent of war-time traffic brought on the necessity for higher and higher rates of use with the result that in December, 1943, 88.0 per cent of the 6,872 locomotives assigned

That modern steam power can set marks around 25,000 miles a month is demonstrated by the New York Central 4-8-4 in service between Harmon and Chicago

Table I—Statistics of Motive Power Assigned to Passenger Service

	Number of locomotives				Status of locomotives			Per cent active to total	Miles per active loco. per day
	Steam	Diesel-electric	Electric	Total locos.	Active	Unserviceable	Stored		
August, 1934	..	+	..	9,424	6,783	2,461	972	72.0	167.0
December, 1935	..	..	..	8,678	5,848	2,183	647	67.5	126.7
December, 1936	..	..	..	8,232	6,240	1,492	500	75.7	127.0
July, 1937	..	..	..	8,114	6,121	1,564	429	75.5	178.7
January, 1938	..	..	..	8,200	5,797	1,743	660	70.8	171.7
July, 1939	..	..	..	7,730	5,398	1,859	473	69.9	186.4
December, 1940	..	..	..	7,312	5,570	1,417	325	76.0	203.4
December, 1941	..	..	..	7,061	5,797	936	328	82.0	206.3
December, 1942	..	..	..	6,758	5,949	665	144	87.2	226.0
December, 1943	..	..	..	6,872	6,050	711	111	88.0	229.3
1944									
January	..	..	..	6,857	5,868	866	123	85.7	214.5
Feburary	..	..	..	6,810	5,774	936	100	84.8	221.6
March	..	..	..	6,811	5,858	858	95	86.1	225.9
April	..	..	..	6,813	5,810	886	117	85.2	224.6
May	..	..	..	6,782	5,723	921	138	84.3	219.6
June	..	..	..	6,809	5,839	834	136	85.7	222.2
July	..	..	..	6,790	5,769	863	158	85.0	221.8
August	..	..	..	6,760	5,763	867	130	85.1	222.6
September	..	..	..	6,740	5,735	859	146	85.0	225.2
October	..	..	..	6,749	5,707	913	129	84.5	225.6
November	..	..	..	6,748	5,675	925	148	84.1	226.2
December	..	..	..	6,877	6,031	720	126	87.8	231.2
1945									
January	6,387	213	288	6,908	5,879	914	115	84.8	216.9
February	6,342	204	281	6,847	5,756	960	131	84.2	217.4
March	6,318	223	278	6,819	5,670	919	140	83.1	216.0
April	6,297	231	282	6,810	5,722	934	154	83.8	216.5
May	6,244	239	286	6,769	5,664	957	148	83.7	223.4
June	6,237	253	290	6,780	5,749	897	134	84.8	228.5
July	6,275	257	282	6,814	5,734	958	122	84.0	227.8
August	6,321	254	290	6,865	5,775	943	147	84.0	231.7
September	6,375	250	285	6,910	5,704	1,004	202	82.5	227.5
October	6,334	264	288	6,886	5,680	1,000	202	82.4	233.3
November	6,358	272	283	6,913	5,717	1,008	188	82.6	241.3
December	6,612	278	282	7,172	6,170	858	144	86.0	244.4
1946									
January	6,574	275	284	7,133	5,896	1,045	192	82.7	230.0
February	6,456	269	276	7,001	5,694	1,109	198	81.3	227.4
March	6,375	275	275	6,925	5,645	1,060	220	81.5	223.9
April	6,294	283	290	6,867	5,459	1,139	269	79.4	221.8
May	6,251	305	287	6,843	5,246	1,083	514	76.6	191.8
June	6,220	332	284	6,836	5,426	1,045	365	79.3	220.6
July	6,115	343	298	6,756	5,327	1,102	327	78.8	224.6

Note: Data taken from I.C.C. Passenger Train Performance Statistics, Statement No. M-240.

to passenger service were actively engaged in handling trains at a rate which resulted in an average daily locomotive mileage of 229.3 per active locomotive. In that month only 711 locomotives were in or awaiting shop and only 111 were stored serviceable. All through the war period, up to and including August, 1945, the number of passenger locomotives in or awaiting shop never exceeded 1,000 and the number stored serviceable varied from a low of 95 in March, 1944, to a high of 158 in July, 1944. The rate of use during the year 1944 was maintained at a fairly constant percentage of active to total locomotives (from 84 to 87 per cent) and the daily mileage varied between 219.6 and 231.2.

As may be seen by reference to the table, the end of the war brought an increase in the number of locomotives in or awaiting shop for the reason that there was a certain amount of deferred maintenance. The number of locomotives stored serviceable did not, however, greatly increase until the summer of 1946 and the percentage of active to total locomotives has been constantly dropping month by month from 86.0 in December, 1945, to 78.8 in July, 1946. The daily mileage, however, has held up well indicating not only that the roads have learned many lessons in utilization during the war period but that the influence of the modern high-mileage motive power, both steam and Diesel, is influencing the average mileage of all active locomotives in passenger service.

The other table shows the distribution of locomotive mileage for the years 1936 to 1946. This table is interesting in that it shows the variation in passenger-locomotive mileage prior to and during the war; it indicates the increasing influence of the Diesel in passenger service and the inroads that the Diesel is making on the total steam locomotive mileage. In the eight months of 1946, the Diesel-electric locomotive accounted for 36.3 million passenger locomotive miles, or 12.2 per cent of the total.

The same I. C. C. Statement (M-213) from which the figures of locomotive mileage were taken also contains interesting information with respect to passenger-train performance. Without presenting in detail the trend of the changing statistics indicating the influence of modern power, it may suffice to say that in the eight months of 1946 the passenger-train mileage per train-hour for steam-, Diesel-electric- and electric-operated trains was 38, 45 and 45 respectively. A significant fact derived from these statistics is that in that period, as compared with the same eight months of 1945, the train-miles per train-hour of steam operated trains has increased from 35 to 38.

Table II—Distribution of Passenger Locomotive Mileage—1936-1946

	Passenger locomotive miles (000)			
	Total	Steam	Diesel	Electric
1936	371,858	355,375	1,269	15,213
Per cent of total	..	95.5	0.4	4.1
1937	384,971	364,814	4,051	16,016
Per cent of total	..	95.0	1.03	4.2
1938	357,120	332,883	7,615	16,722
Per cent of total	..	93.2	2.1	4.7
1939	357,339	329,308	10,476	17,556
Per cent of total	..	92.2	2.9	4.9
1940	362,312	324,075	19,781	18,456
Per cent of total	..	89.5	5.4	5.1
1941	380,269	329,411	30,805	20,053
Per cent of total	..	86.6	8.1	5.3
1942	421,203	358,798	39,581	22,823
Per cent of total	..	85.2	9.4	5.4
1943	465,908	400,225	40,995	24,688
Per cent of total	..	85.9	8.8	5.3
1944	471,160	412,393	33,349	25,407
Per cent of total	..	87.5	7.1	5.4
1945	477,358	410,196	41,685	25,477
Per cent of total	..	85.9	8.7	5.3
1945*	311,065	268,260	26,053	16,752
Per cent of total	..	86.2	8.4	5.4
1946*	297,430	244,495	36,309	16,626
Per cent of total	..	82.2	12.2	5.6

* Eight months.
Note: Data taken from I.C.C. Statement No. M-213.

Steam and Gas Turbines

It was to be hoped that by the time this issue appeared there would be progress to report in the matter of the new steam-turbine and gas-turbine locomotive development work. A considerable amount of such work is being carried on at the moment in connection with gas-turbine locomotive units for the use of both oil and pulverized coal. Two of the latter type turbines are now on order, each one of which will be capable of producing at least 3,750 shaft horsepower; they are expected to be ready for delivery some time in 1947. The actual design of the locomotives which will use these two makes of turbines will be undertaken in the near future by the three major steam locomotive builders. The locomotives will be double-ended, thus eliminating the necessity of turning them at the end of a run. They will be capable of operating about 1,000 miles without refueling. An oil-fired train heating boiler will be used and the oil supply for this boiler will also serve as pilot fuel in the main combustor, as well as fuel for a small auxiliary Diesel engine which will be used to start the main turbine. The transmission system will be the convention direct-current system controlled in a manner similar to that now used on Diesel-electric locomotives.

Training Employees in Friendly Service

Railroads continue, and some expand, their programs to this end, but opinion surveys show much remains to be done

THE railroads are continuing—some of them with increased emphasis—their efforts to arouse the interest of employees in providing more thoughtful and more courteous treatment of the traveling public. Nevertheless, the incontrovertible yardstick of scientific opinion sampling—the method which proves its soundness by its uncanny accuracy in predicting election results—shows that rail carriers still have a long way to go in achieving a satisfactory level of performance on the part of their passenger service personnel.

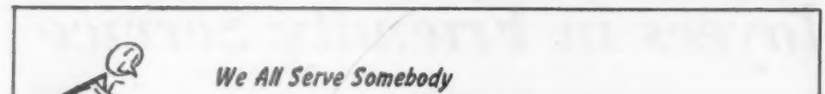
Specifically, the annual survey of public opinion conducted last summer for the Association of American Railroads by the Opinion Research Corporation revealed that almost 4 persons credited the airlines with courtesy superior to the railroads to 1 who put the railroads in the more favorable position. Among recent plane travelers, the ratio of those who gave the airlines a better reputation than the railroads was quite overwhelming—and all this despite the fact that the airlines themselves have come in for considerable criticism lately for alleged deterioration in the quality of their service.

Moreover, criticism of railroad employees for rudeness is on the increase. People who had made a recent train trip have been asked the following question in the A. A. R. annual surveys: "Did anything happen on this trip that caused you to be particularly critical of railroad employees, or did you feel that most of them made an effort to please the public?" In 1942, 7 per cent of the people who were asked this question replied in a manner reflecting criticism of employees. In 1943 the percentage of critics was 8 per cent. Since then it has gone steadily upward until, this year, it reached the ratio of 17 per cent—or more than one person in six. Among *frequent travelers* 42 per cent were critical of their treatment at the hands of employees.

As a corollary to these disclosures,

Cartoons Amuse as They Instruct

Many railroads use this method—These are from a C. N. R. booklet


We All Serve Somebody
B. & O. courtesy makes me want to be pleasant with the people with whom I do business. It makes me want to be considerate. And that's one nice thing about courtesy: give some to somebody and he wants to spread it; you start an epidemic of goodwill.
It must be fun to work for an organization in which there is apparently such an atmosphere of wanting to be nice to everybody.
I'll bet that B. & O. employes live longer and have fewer stomach ulcers than employes of a lot of other outfits.
As I say, I don't know how B. & O. employes get "that way." It may be because the B. & O. is the oldest railroad in America and got the
Courtesy is like a pebble in a lake. It radiates in ever-widening circles

Artist Don Herold puts zip into informative literature circulated by the B. & O.

Railway Age's own survey (published in two issues last March), made by the same firm which does the A. A. R. opinion research, of the opinion of railway employees themselves, revealed that 70 per cent of employees believe passengers are treated with all the consideration to which they are entitled. Only one employee in four felt that passengers were inconsiderately treated, and only half of this number mentioned courtesy as one of the qualities lacking in proper service to the traveling public.

These figures would appear to indicate—however great the railroads' efforts have been to awaken employee interest and understanding of this quality which is so crucial in the successful conduct of a competitive business—that these efforts have still not been sufficiently intensive or skillful to enable the railroads even to hold their own in passengers' estimation. The railroads reputation for courtesy is, to be frank about it, getting steadily worse. Perhaps the situation is not yet critical—but it is certainly bad enough when one customer out of every six reports dissatisfaction at the manner in which he is treated by employees.

Six Means of Education

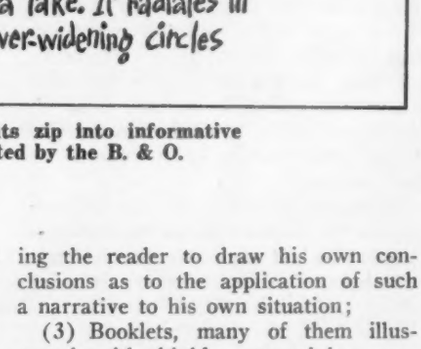
The railroads' endeavor to arouse employee interest and understanding in this sphere have followed a number of channels, among which may be enumerated the following:

(1) Circulars and messages in employee publications, giving the arguments for courtesy in hortatory form, without detailed instruction in the handling of typical difficult situations;

(2) Printed matter which publicizes outstanding acts of consideration and courtesy by individual employees, leaving the reader to draw his own conclusions as to the application of such a narrative to his own situation;

(3) Booklets, many of them illustrated with highly entertaining cartoons, which not only preach courtesy but show concrete instances of its application;

(4) Educational slide-films and movies, usually showing practical means of handling concrete difficult situations;



The employee's own interest in courteous service is pictured in a P. R. R. booklet, "It's a Good American Custom"

(5) Class-room instruction (usually by the "conference method") in dealing with the public or in some specific passenger department task (such as dining car service or selling tickets);

(6) Educational work carried out by supervisors and "traveling" employees.

The following quick summary of accomplishments of individual railroads along these lines makes no claim to completeness. Indeed several carriers which have been particularly active and successful in this direction are not mentioned at all, for lack of up-to-date information at the time when this report was written. But the purpose is not a comprehensive summary anyhow; instead it is just to outline the educational instruments available with the hope that those roads, interested in maximizing their passenger business, may find some hints which may prove helpful to them.

Programs of Individual Roads

The Central of Georgia has in preparation a pamphlet, written and illustrated in a light vein, which will shortly be distributed, not only to employees but also to patrons and the public, on the subject of courtesy. The company is continuing its long-standing policy of making commendatory mention in its employee magazine of instances of good service which win approval from patrons.

The Pennsylvania has recently distributed to employees an interesting booklet, illustrated with cartoons, entitled "It's a Good American Custom," which calls to the employee's mind how he himself does his trading with courteous merchants and reminds him that the railroad's customers are similarly influenced in their choice of means of transportation.

In addition, the road is constantly training employees who meet the public in matters of tact, personal efficiency, neatness, and other aspects of helpful public service. Particularly gratifying results are reported to have been achieved by the retraining program instituted by the dining car department, covering every employee, no matter what his length of service.

Cartoons Are Popular

In addition to its regular program of employee training administered by supervisory officers, the Canadian National has a special instruction staff on duty in its dining and sleeping car departments, whose duties include the schooling of these employees in best performance in their intimate and constant contacts with the public. During the past year particular stress has been placed on courtesy, and to inculcate this trait the company has circulated several pieces of skillfully prepared and interesting cartoon literature.

In reporting its progress in employee training, the Seaboard discloses that it continued its "intramural" discussions of courtesy even during the war years when, admittedly, the quality of service was sub-standard. Last year a system of supervisory training was instituted embracing also those employees who have daily contact with the public. This program also includes exceutives in key positions, and the lessons learned in these discussions are passed down to employees generally.

Specific and constant training and instruction is given dining car employees as well as the attendants on passenger trains, including those in the lounge and tavern cars. These employees are drilled in efficiency and courtesy by employees of their own race who have been selected and trained for the purpose. With some improvement in the quantity of available employees, the S. A. L. is carefully screening applicants for positions in the endeavor to secure the highest type of available personnel.

On the Gulf, Mobile & Ohio the operating department's supervisors are including emphasis on courtesy in their contacts with ticket agents and other employees who have direct dealings with the public. At regular intervals, rules examiners include instruction in public relations in the classes they conduct for employees.

The company makes a point of publicizing, not only in its employee magazine but also in local newspapers, all letters of commendation from patrons who praise employees for extraordinary service. The company employs hostesses on its passenger trains whose function is wholly that of adding to passengers' comfort. They make a point of being able to give travel information, including that covering service by rival agencies of transportation.

Joint Effort

Soon after the end of World War II, the Louisville & Nashville gave attention to the immediate improvement in its relations with the public, especially with respect to employees who come in close contact with customers, i.e., ticket sellers, agents, station attendants, and trainmen. A special committee, representing the passenger, personnel, and transportation departments, after careful study, inaugurated a plan under which a special representative of the passenger department jointly with the superintendent of each division visited the more important ticket offices and talked to the personnel, with a view of bringing directly to their attention the necessity of considerate and courteous treatment of patrons, the desirability of maintaining proper personal appearance, and generally developing their knowledge and ability so as to bring service up to the highest possible standard.

On-line passenger representatives when making periodic visits to local stations, as well as the more important ticket offices, make it a point to discuss this general subject with ticket clerks, clerk-operators and other employees who come in contact with passengers. For the primary purpose of improving public relations, through a more courteous and friendly attitude on the part of passenger conductors, flagmen and porters, meetings were arranged at suitable intervals at strategic points. To the extent possible, these gatherings have been participated in by the division superintendent and the local passenger representative. While the results of these efforts have been encouraging, the company recognizes that a more comprehensive educational training program, particularly for employees in ticket offices and on passenger trains, may be quite desirable.

The Chicago & North Western is another of the roads which is convinced of the efficacy of good cartoons, drawn to interest and amuse the employee while it conveys its lesson, as an educational medium; and it now has in preparation such a booklet, entitled "Mind Your P's & Q's," which will be distributed to all employees with public contacts.

The North Western is carrying forward its job relations program, inaugurated in 1944, in which certain key men have held meetings with small groups of supervisory employees over the entire railroad. The principal purpose of these training programs has been to improve the relationship between employee and supervisor, but in doing so, the aim has been for a threefold result: (a) to improve relations between supervisors and employees so that each group understands its full responsibilities; (b) by doing so the supervisor improves his relations with the public; and (c) the employees likewise improve their relations with the public as public relations is explained at these conferences.

In addition to this program, the public relations department has endeavored from time to time through the employee magazine to stress the importance of

Company Manners PAY OFF
Most Becoming Thing to Wear
It's a pleasant smile. For it makes others want to do as you ask and feel confidence in what you say.
SURE / YES
WHY YES
OF COURSE
Are You a "Promising" Railroader?
Nothing earns ill will like a rash promise that can't be kept. So make promises only when they're sure of fulfillment.
PLEASE
THANK YOU
I'M SORRY
Little Words That Do a Big Job
Please. Thank you. Excuse me. Such little words do a big job in building good will. So let's use them generously.
Remember— to the customer and your fellow worker—
you ARE NEW YORK CENTRAL!

The New York Central is making posters of selected pages from its popular booklet "Company Manners"

courtesy and prompt attention where the public is concerned. In the monthly employees' magazine the public relations department endeavors to convey this message by various means, such as the president's message and the publication of letters praising the acts of employees.

The Rock Island has not let up on its campaign to bring employees to the realization that, with the war over, patronage of the railroads will be based on consumers' preference rather than necessity. It instituted this campaign in the late months of the war and is still at it, through the pages of the R. I. "News Digest" and otherwise. The company is now preparing to distribute 5,000 copies of Elmer Wheeler's booklet entitled "Back to Selling Courtesy." The attitude of the Rock Island toward this program is epitomized in one of its booklets in the following language:

"All this talk about courtesy may sound as if Emily Post were moving in on the Rock Island. Well, we don't expect our waiters to carry a coffee cup with the dainty airs of Emily. We don't expect our conductors and ticket agents to bow from the waist like so many Lord Chesterfields.

"But Old Lord C., that apostle of politeness, was more than a dandy who pranced around being polite just for the fun of it. His unfailing politeness made him a great diplomat and he negotiated many important treaties for his country. His tolerance and tact even got him a welcome as Lord Governor of Ireland, which took some doing for an Englishman!

"This same considerate and dignified kind of courtesy can win us the respect and liking of the public.

"Courtesy always proves the truth of the old Spanish proverb: 'In honoring others we amply honor ourselves.' (And, we might add, 'in honoring others, we help ourselves.')"

The Southern Pacific, as was briefly recorded in our article on employee training in last year's Passenger Progress Annual, inaugurated in 1945 a comprehensive program of training by professional management consultants of several thousand supervisors and employees who come in contact with the public. The course for supervisors embraces six two-hour weekly meetings, with a two-hour follow-up meeting a month or so later. The public contact course for employees consists of five two-hour weekly meetings. The "conference method" of instruction is followed, i.e., there is no teacher who tells his audience what's what—but the skilled chairman in charge just puts the questions, and draws out the answers from the participants themselves, following the procedure utilized by Socrates in Athens some 2,500 years ago.

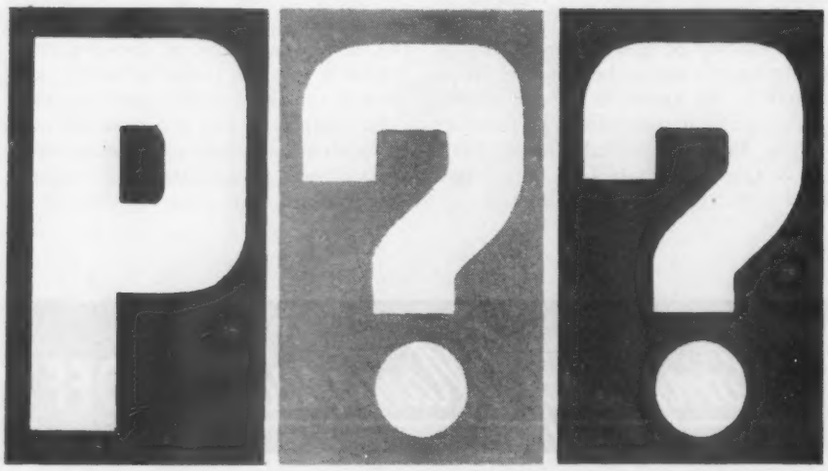
As another aspect of this program, closely tied in with the conferences, the S. P. will introduce two sound-slide training films and an hour-long talking picture in color. The training program starts at the very top of the railroad, with personal participation by the president, vice-presidents and department heads.

The Baltimore & Ohio began its campaign for courtesy in its employee magazine 34 years ago and that topic has continued throughout the intervening years as one of the principal editorial objectives of that publication. The company believes that the reputation its employees enjoy with most of the road's patrons will sustain its opinion that its courtesy program has been notably successful. A regular feature of the B. & O. magazine has been articles which inculcate courtesy—not through editorial preachments—but by reporting actual instances of extraordinary service to patrons by specific employees.

The well-known cartoonist Don Herold has prepared some interesting literature during the past year for educational use among employees and a booklet was distributed entitled "Do You Know Your B. & O." (see *Railway Age*, July 6, 1946, page 19).

On the New York Central approximately 40,000 employees of the system have been reached by its public relations training courses. A new season of these courses is now under way and both beginning courses and advanced courses are being organized. The largest group to be taking this training during the present season will be the employees of the dining service department. These include stewards, waiters-in-charge, waiters, porters and chefs. Dining service employees who will take the training will number 700 in New York City, 200 in Buffalo, 100 in Boston and 1,000 in Chicago.

The company's "Telephone Courtesy" training program is also expanding (described in *Railway Age*, September 7). The road is also following up the effective message of its pamphlet, "Company Manners," which was distributed to employees late last year. It is reprinting pages from this pamphlet each month to be posted on bulletin boards as a reminder that good manners are perennially fashionable.



Pere Marquette employees received mysterious post cards at their homes as a preliminary to the inauguration of the "PMS" campaign

A Popular Sales Booklet

The Frisco all during the war endeavored through every method available to inculcate in all employees a sense of the desirability of maintaining public good will through courteous treatment, notwithstanding the enormous volume of passenger traffic then being handled, and notwithstanding the added duties and responsibilites thrown on the individual employee. Exemplification of this principle was, and is, being disseminated through bulletins, talks by supervisory officers to groups of employees, and at the meetings of employee groups, of which there are branches at all of important points on the system.

One of the media used was a wide distribution of "Elmer's Little Black Notebook," a publication issued by Elmer Wheeler of Dallas, Tex., pointing out in a humorous vein the necessity of handling customers during a sellers' market in such a manner that the seller would not be "put down in the customer's little black notebook" for use when the sellers' market had become the buyers' market. Special emphasis was laid on the fact that conditions of heavy traffic would not always

prevail, and that there would come a time when the road would need the good will of these customers.

The several methods which the Canadian Pacific has used with success in keeping the subject of tact and courtesy constantly before every public-contact employee include the issuing of circulars by the passenger traffic department, followed through by meetings in the field, the use of sound-slide films for instructing small groups, and by articles in the company employees' magazine.

Classes for Conductors

Part of a new plan to enlarge this instructional program will go into effect shortly with the beginning of classes for conductors not regularly assigned to passenger trains in the fine points of handling passenger traffic. A tour of all the system by a traveling passenger agent for this purpose is the result of a suggestion made to the Canadian Pacific's personnel department through the employee's suggestion plan.

Supervisors who themselves are called periodically to meetings or group discussions carry on a constant program of instruction. At these meetings sound-slide films, and short addresses by department heads are used to bring out new angles in dealing with passengers. The program is also being extended to freight service, a sound-slide film dealing with freight handling and shipping having been widely shown among all personnel this year on C. P. R. The subject of courtesy is introduced as part of discussions at safety and rule meetings in order to reach operating crews with these instructions, and employees are reached also by circulars and pay check enclosures.

On the Missouri-Kansas-Texas the passenger traffic department publishes a monthly bulletin called "Information" which is distributed to all solicitors, agents, and others, and which contains suggestions on courtesy. The dining car service issues regular bulletins on courtesy to all members of that department, especially to waiters and stewards and others who contact the public. In addition, articles dealing with this subject are published regularly in the company's employee magazine.

The Denver & Rio Grande Western has produced a 16-mm. motion picture, with color and sound, entitled "Write Your Own Ticket," which was shown extensively to most of its employees last year. A character actor was employed to depict a "good" and a "bad" passenger train conductor, dining car steward, yard office clerk, and other jobs where employees are in contact with the public—the various scenes taken on the Rio Grande showing the "right" and "wrong" way to handle the public, and pointing out the details of behavior which are so important in keeping customers friendly toward the road. The moral drawn was that while there was plenty of business during the war, it would not always be that way, and that to mistreat the public during the war was in effect jeopardizing post-war jobs on the road.

The picture is now being revised better to fit the post-war program of employee training. It has been consistently well received by all employees. In addition, the Rio Grande has a continuing program of training for all dining car stewards and waiters.

On the Union Pacific the position of courtesy director, discontinued during the war period, was reinstated in October, 1945. Due to the fact that there was still a heavy movement of military personnel and employees were working steadily with little time out except for rest, it was decided that in addition to seeing that the regulations were properly observed by officers responsible, the courtesy director would also meet as many officers and passenger personnel as possible at stations, terminals and on trains. Officers were requested to cooperate fully in the program.

The necessarily old equipment in use and the many new and constantly changing employees at this time also required much attention towards improvements in cleanliness and sanitary conditions, and to the organization and functions of the chair car attendants.

Inculcating Cleanliness

The work was handled in this manner with officers and passenger service employees cooperating fully. The reinstatement of the courtesy campaign gave notice that improvement was desired in this respect and the time had arrived to work individually toward this end. The train crews took more care in their appearance in spite of the scarcity of clothing and the difficulty of obtaining uniforms. Close attention to the work of the chair car attendants brought about a favorable attitude on the part of this personnel. The use of trash boxes on coach trains, and additional cleaning work at terminals, produced favorable results. The dining car department also undertook to improve the service and courtesy of its employees, with noteworthy results. Periodical distribution of courtesy bulletins is also being made. Passengers who have traveled on the U. P. "before and after," and officers who spend much of their time on the road, all attest to the fact that there has been a decided change for the better in cleanliness, sanitation and courteous service.

The Pere Marquette has had in operation for some months a comprehensive program (designated P M S, for "Pere Marquette Service) for awakening employees to their personal interest in dealing courteously with passengers. A distinctive feature of the program is that all literature is sent by mail to employees at their home addresses. Great care as to content and method of presentation goes into the preparation of "copy" for this literature. Monthly citations are made of two employees for outstanding acts of courtesy, and gifts of flowers or fruit are made to the wives of employees thus cited—as well as to those of employees who report the acts which win such awards. An annual award is made to the employee whose contribution in this direction is deemed most noteworthy during the year—this award to consist of an annual "A" pass for the employee and his wife, plus either merchandise or cash. Newspaper editors and commerce chamber secretaries serve with officers of the company on committees which make these awards.

Intensive Training for Waiters

The Illinois Central has during the past year continued the educational efforts it had under way a year ago—i. e., service clubs, training courses and refresher instruction, use of courtesy manual, president' message to employees, suggestion system, company magazine and the employee selection program—and has, in addition instituted a comprehensive training program for cooks and waiters. The center of this training program is the new dining service school on the fourth floor of the commissary building in Chicago. Here has been built a representative dining car with a complete kitchen and a portion of the serving section of such a car. Four tables seating 12 persons enable waiters to serve dining guests just as they would on a diner out on line.

In the theater-classroom which occupies the rest of the floor space, instructors show training films and hold lectures and demonstrations for their classes.

In addition to the facilities in the commissary building in Chicago, a dining car has been converted into a mobile school. Two tables remain in the car for demonstration purposes, but the rest of the floor space has been utilized for seating space and for a screen and motion picture camera.

The Burlington has in preparation another brochure on courtesy for distribution among employees—to supplement the list of literature along these lines which it has already distributed. The Erie is continuing its educational program as outlined in this space in last year's Passenger Progress Annual. The Milwaukee, a pioneer in the is-

(*Continued on page 845*)

Getting Passengers on the Trains

Sales and service features are scheduled for improvements to streamline the prospective customers' reception

EVEN the fastest and most luxurious service is not going to please the passenger very much if he is angry and upset before he boards the train. Therefore, if the railways are to meet competition successfully, it is essential that they smooth the way of the prospective passenger from the time he first gets the travel gleam in his eye until he climbs on the train. It is true that railway competitors are having their troubles in this respect. Many recent articles in national magazines have indicated that the much-publicized "personal service" of the air lines has bogged down under increased travel. But the railways are not going to be able to meet threats to their passenger revenues simply by sitting down and gloating over their competitors' misfortunes. Active, constructive work in putting their own house in order is vitally necessary.

Selling Travel

In the past, the sales methods of the railways have been subjected to a great deal of criticism. The adjective "archaic" is one of the mildest that has been applied to them. There was some excuse for such criticism, but the important factor was not always considered that selling railway passenger travel is quite a different process from most other sales efforts. For one thing, it is as impossible to send out a passenger solicitor to each of the millions of railway customers as it would be for a national grocery store chain to send out solicitors to call on each of its customers.

City and traveling passenger agents can call upon a few individual customers, but, in general, their efforts are more effective in calling on interline ticket agents and in selling group movements, such as to conventions and other meetings. Therefore, it is the telephone reservation clerks and the ticket sellers in city or station offices who make the all-important first contact with the prospective customer, and it is to this class of railway employees that sales training should most be directed.

It is safe to assume that the more experienced employees, from city passenger agents up, have, because of experience and training, a better average level of sales ability than ticket clerks. Even so, their further training should not be neglected, particularly now after the war years during which they were engaged in dozens of other pursuits having little or nothing to do with sales. Many railways have called their men together for post-war sales conferences. The Santa Fe, for example, called in its passenger representatives from all over the country for a sales meeting in Colorado last summer. At this meeting, which really was a refresher course for passenger solicitors, all of the complex problems concerning post-war passenger sales and service were considered and discussed. Such get-togethers are always productive and they are particularly so at this time, after active salesmanship for passenger travel was discouraged during the war years.

Advertising

Railway passenger departments have always done a certain amount of advertising. Until the war, railway advertising was almost invariably based upon direct sales appeal. When there was nothing that could be advertised, so far as selling passenger service was concerned, these campaigns took the form of institutional advertising. Much more important, railway executives began to pay closer attention to their advertising than ever before, with the result that, even after a portion of the campaigns has been diverted back to sales appeal, railway advertising is infinitely better than it ever has been before. The railway ad that looked like an old-fashioned timetable has largely disappeared. In its place are advertisements that, for color, sales and eye appeal, rate with the best of the advertising done by other industries. Recurrently, railway advertising receives awards of merit from the various advertising associations; something that rarely or never happened up to a decade ago.

In a relatively few years, railway advertising has left its swaddling clothes. There is still too much inclination to curtail advertising appropriations as soon as revenues or traffic begin to decline, but, in general, it may be said that most railway managements are convinced of the merits of advertising as an important adjunct of sales.

In this connection, there has been an astonishing improvement in railway timetables, which can be, but were not until recently, utilized to their full extent so far as advertising value is concerned. The old black and white pamphlets that were about as readable and exciting as a bookkeeper's ledger have largely disappeared. In their places are bright, colorful booklets, which not only give train schedules in clearer form, but which also advertise the railway's services intelligently.

Reservation Bureaus

Telephone reservation bureaus became a most important part of railway ticket sales during the war. Such bureaus were, of course, in existence prior to the war, but the tremendous demand for tickets during the war produced the necessity for enlarging and expanding the activities of these bureaus materially.

Training schools for employees in such bureaus were established at most of the large railway centers. In general, women were recruited to staff telephone reservation desks. In view of the tremendous volume of work which these bureaus had to carry out during the war, and also the shortage of efficient clerical forces, the operation of reservation bureaus did not always move smoothly and efficiently, but now that the pressure is off to a certain extent, several railways have reviewed the activities of the bureaus and are studying ways of improving their operation. The functioning of every reservation bureau in the country should be analyzed in the light of peacetime conditions and the schooling of the employees should be undertaken on a more extensive basis. The passenger will no longer accept telephone discourtesy and the misinformation which, it must be confessed, was occasionally given by inexperienced reservation clerks. Also, the railways should not expect passengers to accept gracefully the difficulties and inconveniences resulting from duplicate sales of space.

Ticket Office Procedure

There is much room for improvement in railway ticket office procedure at city and station offices. The number system, insuring that each customer be waited on in his propert turn, is being continued in many offices and should be followed wherever heavy ticket sales are encountered.

Incidentally, during the war, railway ticket clerks were under such constant pressure that many of them gave way to the perfectly human inclination to be

surly and discourteous. This attitude was a war-time phenomenon of sales people in every industry and was not by any means confined to railway ticket offices. Unfortunately, a number of ticket sellers have carried over this attitude into the present. A recent check made of 18 large ticket offices in various cities showed that such surliness and discourtesy are still by no means uncommon. The attitude, "don't you know there's a war on," was deeply rooted, but it is high time that it be eliminated entirely. Training of ticket sellers in courtesy should not be confined to new employees, since, in the check mentioned above, it was observed that in many cases the older employees were more cantankerous.

A number of simplifications in the issuance of tickets have been made in certain ticket offices and such practices should be made universal throughout the country. In this connection, the introduction of mechanical ticket sellers has made considerable strides recently and such machines are used by the Southern, the Pennsylvania and the New York Central, among others. The machine resembles an ordinary cash register and all the ticket seller has to do is to press several buttons to produce a ticket imprinted with the destination and origin points, the railroad fare, government tax and other data. At the same time, the machine accounts for the money and records by whom the sale was made, so that at the end of the day a push on a button records the total sales by each ticket seller and the total sales for the entire office.

The Southern has also speeded up the auditing of ticket supplies by the use of an electronic remote-control recording machine. Traveling auditors take this compact machine to a Southern ticket office, plug in on the electric current and count swiftly through the stock of passenger tickets. Under this system, the auditor merely calls the description of the tickets into a microphone and the machine does all the recording.

Before the war, considerable strides were being made in working out some system in city ticket offices for separating the customers who were merely asking for information from those who were actually purchasing tickets. A further refinement of this was inaugurated by the Union Pacific in the form of an "usher" who operated on the customers' side of the counter and separated the "sheep from the goats" and, by directing customers to the proper clerk, speeded up the service materially. There is opportunity for efficiency studies in every ticket office and a post-war check-up should be made to insure an increase in the sales technique and general efficiency of such offices.

Shortly before the war a number of railroads engaged in extensive programs of improving the appearance of their city ticket offices. These programs should be renewed, both in city ticket offices and station ticket offices. An example of what may be done in the latter case is supplied by the St. Louis Union station. Here the former unsightly cages have been replaced by a semi-circular counter which is not only much more pleasing to the eye, but has proved to be much more efficient.

The schedules of trains are, in many instances, controlled by operating considerations beyond the province of the traffic department to remedy. However, there are many situations where there is considerable flexibility in such schedules. In the inauguration of new trains, the example of the Chicago & Eastern Illinois might be cited. Before this railroad scheduled its "Meadowlark" between Chicago and Cypress, Ill., 4,000 postal card questionnaires were sent to the members of the Chambers of Commerce in each town along the route and to other prospective customers whose names were supplied by the local agents. To personalize the idea still further, local agents and traffic representatives sent out these cards over their own names. Several prospective schedules were set forth on each card and the one selected by the majority of the people to whom the cards were mailed was put into effect. A similar mailing of 10,000 postcards has been carried out in connection with the "Whippoorwill," the new C. & E. I. streamliner between Chicago and Evansville, Ind.

During the war the customers had to ride the trains and like it. It would seem to be obvious to everyone concerned in the railway passenger business that this situation no longer prevails. Unfortunately, observation and checks indicate that there is far too much of the "take it or leave it" spirit still remaining as a residue of war-time conditions. If the railways are to meet the increasing competition of the future, this attitude will have to be changed *wherever* it is.

Right—One of the important new developments in speeding up ticket sales is the automatic ticket machine. The one shown can be operated by the passenger and there are others operated by ticket sellers which materially speed up their work. Below—Attractive exterior and interior arrangements of ticket offices present a distinct sales appeal

Wiping Out Lost Time to Improve Service

Station and servicing delays are demanding and receiving increased attention as the railways push average speeds towards 60 m. p. h. Proper supervision essential

ONE of the major problems faced by any railroad seeking to operate dependable, high-speed passenger train service is to minimize delays en route. When overall average speeds are low—in the neighborhood of 40 m. p. h.—and road speeds of 60 to 70 m. p. h. are permitted, delays en route are seldom of a particularly serious nature unless stops are unduly frequent or of exceptionally long duration, as the time lost can be recovered with comparatively little difficulty. However, when average train speeds close to 60 m. p. h. are desired, delays of only a few minutes en route result either in lost time or excessively high operating speeds in an effort to recover the time.

To illustrate the effect of train delays on average operating speeds required to attain an overall average of 40 m. p. h., compared with 60 m. p. h., consider the hypothetical case of a train operating over a 100-mile division, having delays en route totaling 30 min. In maintaining a 40-m. p. h. overall average on the division, the train will be on the road 2 hr. 30 min. and will have an average operating speed of 50 m. p. h., easily accomplished on most roads without exceeding 70 m. p. h. If, on the other hand, it is desired that this train average 60 m. p. h. on the division, it will be on the road only 1 hr. 40 min., and, assuming the same delays en route, will have only 1 hr. 10 min. available for running over the division, and will be required to maintain an average running speed of 85.7 m. p. h.—obviously a most difficult, if not impossible, requirement to fulfill. It is apparent, therefore, that if high average speeds are desired, some solution to the problem of delays en route must be found.

Local passenger, mail and express trains not only eliminate many stops by fast trains, but, by handling the bulk of the heavy mail, baggage and express traffic, also reduce the duration of those stops made

Four Causes of Delays

Analysis of delays to passenger trains reveals that they fall into four general classifications: Those caused by the track and roadway, including both permanent and temporary speed restrictions; those caused by interference by other trains; those caused by necessary work in stations, such as the loading and unloading of passenger, mail, baggage and express; and those required for servicing the equipment in the train, including stops for fuel and water for locomotives, watering and icing cars, mechanical inspection, stocking dining cars, etc. In this article, only the latter two classes of delays will be discussed.

At the outset it must be admitted that no two railroads are alike in their operating characteristics and problems, and that the methods which work successfully on one will not necessarily apply with equal success to another. The physical conditions surrounding each stop, the characteristics of the traffic to be received and discharged, the movements of other trains, the nature of the equipment in the trains—these are but a few of the many variations between railroads, or even between regions or districts of individual roads, which affect the operation. Each of the methods described in this article is in use on at least one road, but so far as is known, no railway makes use of all of them. They are advanced primarily as examples of the nature of the problem and the kind of action that must be taken to overcome—or at least to minimize—it, and not as a panacea or cure-all for all such delays.

Good Supervision Essential

A survey of the causes of excessive train delays at intermediate points shows that there remains one, and only one, universal remedy — adequate supervision. Good supervision is, and will remain, the key to a reduction in these delays. Better facilities for taking fuel and water, different forms of motive

power, wider mail and baggage car doors, smooth station platforms of the proper height, separate mail and express trains, and many other items of this sort, are all valuable aids to speeding trains through stations, but unless they are properly utilized they are of little overall benefit to train operation.

Consider the case of a heavy overnight train operating into a major terminal, which, notwithstanding its slow schedule, is consistently from one to two hours late in arriving at its destination.

In an effort to improve the performance of this train, Diesel power was substituted for coal-burning steam locomotives and a certain amount of delay caused by taking fuel and water and cleaning fires has been eliminated. But—the only net results have been a cleaner, more comfortable ride for the engine crews, and perhaps a saving in fuel and water costs, while the train runs just as late as ever. This is not to say that the substitution of Diesel for steam motive power on this assignment was improper, but rather to point out that the substitution in itself did not solve the problem.

If a careful analysis of the delays to any train reveals that the primary cause of the delays is ascribable to the motive power, in spite of the fact that it is being used to its maximum effectiveness, and if the relationship between the total delays and the schedule is such that elimination of these delays will bring about the desired on-time performance, then a change in the motive power assignment is called for. However, when the major causes of the delays lie elsewhere, unless action is taken to end them, a substitution of motive power in itself will avail little.

Lateness Gets to Be a Habit

Unfortunately, when a train is habitually one to two hours late the employees concerned soon learn to accept that condition as normal. They learn, too, just how much lost time will be tolerated by the management, and perform their tasks accordingly, so that unless the entire operation is subject to improved supervision, the savings accruing from a change in only one phase of the operation are quickly absorbed by other delays, with no overall improvement in the train's performance. The plain truth is that, just as an effort to improve only one phase of any particular operation can have little effect on the performance as a whole, failure of supervision to see that each and every part of the operation functions properly can so lower the morale of all employees concerned as to make on-time performance virtually impossible.

Failures, of course, will occur at some time or other in all of the component parts of passenger train operation, but where consistent failures in any one phase of the operation are tolerated by management, it is not long before the morale of the organization sags to the point where repeated failures occur in all phases of the operation.

Schedule with Care

In the problem of delays resulting from the receipt and discharge of traffic, railroad management has two major responsibilities: first, to establish and maintain workable schedules, and second, to see that local supervision insists on adherence to these schedules. In setting up the schedules for its principal passenger trains, every road is under constant pressure from local interests to stop these trains at certain stations. This pressure may take the form of promises of additional passenger revenue, but in too many cases it assumes the aspect of threats to divert important freight traffic to competitors.

One of the primary duties of management is to weigh the relative importance of all of the factors involved in the scheduling of passenger trains, admitting at the outset that it is physically impossible to combine in a single train both high-speed services, or even medium-speed services, with local passenger train services. The potential revenue to be realized from a fast through train must be balanced against that which can be expected to accrue if numerous intermediate stops are added, and a decision reached as to which stops should be included in the schedule. Once the stops are determined they should be rigidly adhered to and requests for special stops refused except in cases of real emergency.

Many roads are faced with the problem of a total traffic potential, including passengers, baggage, mail and express, that does not justify the operation of more than two or three passenger trains in each direction daily, and sometimes not that many. In such cases, if local traffic must be handled, it is usually better to establish one or two high-speed schedules each way, supplemented by a local train, rather than to forego entirely the increased revenues which accompany dependable, high-speed train services.

Analyze Delays

Even when protecting local service is arranged to permit the elimination of numerous intermediate stops by more important trains, there is still a certain amount of head-end traffic that usually must be handled by these trains. The Railway Express Agency, quite naturally, desires to dispatch its traffic as expeditiously as possible, and the post office and the postal laws require that the railways handle first-class mail on their fastest scheduled passenger trains.

Considering express traffic alone, many roads can and do put a definite limit on the amount that will be handled on specific trains, and on the time allowed employees of the Express Agency to load and unload it. But when this is done, other service must be available to move the remaining express with reasonable promptness. At least one railroad superintendent currently makes a careful analysis of the express traffic moving over his division, and, in consultation with the route agent of the express company, endeavors to work out the best possible routes and trains for the handling of this traffic, consistent with adherence to the schedule of the line's major passenger trains. He recognizes that such conferences can never settle these matters permanently, so holds them at frequent intervals as the traffic flows and train schedules change.

Cooperating With the P. O.

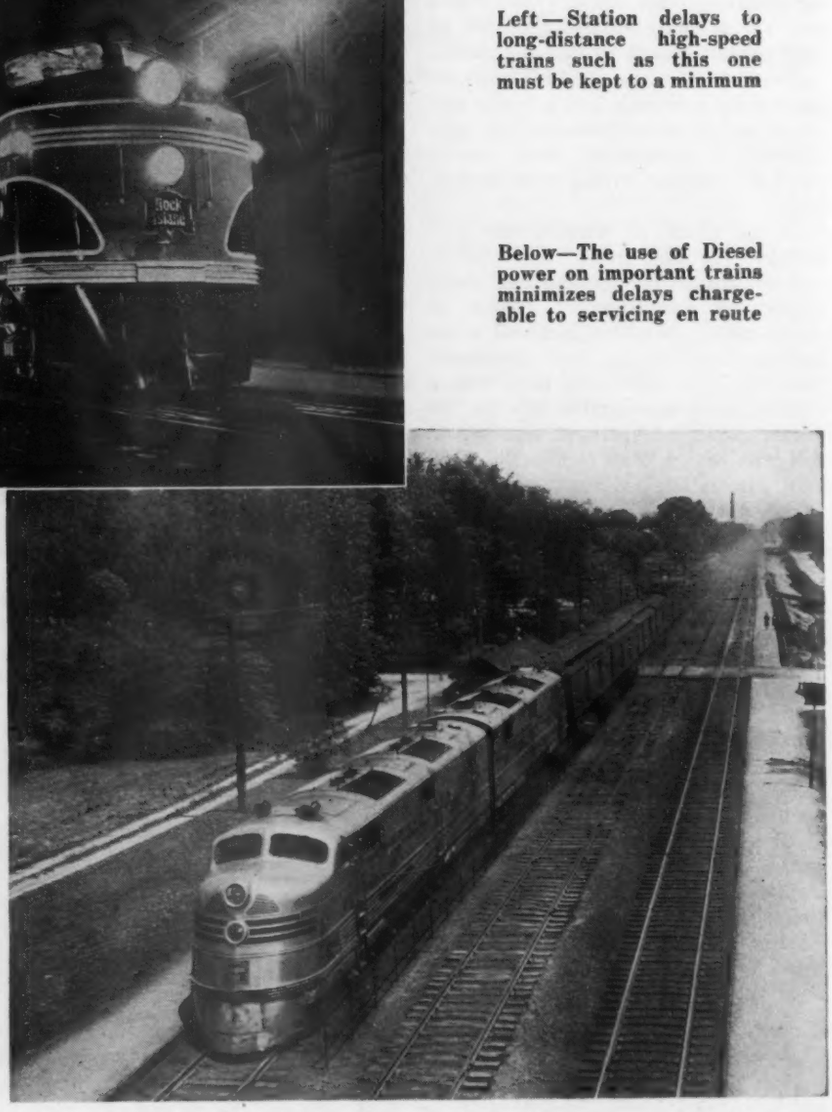
The division forces can also do much to expedite mail handling through contacts with postal service officers. These men are just as anxious as the railroads to see that passenger trains move on schedule, recognizing that efficient mail transportation is built around scheduled movements completed on time. Although the division forces have no authority over postal employess, and trains are prohibited by law from running away from first-class mail, diplomatic handling of mail delays with the postal employees immediately concerned, and with postal supervisors when necessary, will greatly minimize mail-handling delays.

As when handling express traffic, analysis of repeated delays in handling mail frequently reveals the solution. Often it will be found that, contrary to postal instructions, mail other than first-class is being loaded on high-speed passenger trains at intermediate stations, causing serious delays. Where adequate supporting train service is available, the post office does not require that low-class mail be handled on the fastest passenger trains scheduled, and analyses of this sort can be useful if the remedies indicated by them are acted upon.

There does not seem to be much that can be done in the way of improving mechanical facilities to speed the loading and unloading of mail and express en route, although power trucks of various types are of considerable assistance in handling this traffic within individual terminals, and are often used to good advantage in loading storage cars. On the other hand, the proper maintenance of baggage and mail trucks so they do

Left — Station delays to long-distance high-speed trains such as this one must be kept to a minimum

Below—The use of Diesel power on important trains minimizes delays chargeable to servicing en route



not break down unexpectedly, and of station platforms so that car and baggage truck floors are at the proper relative heights, and so that baggage trucks can be moved easily, are of the utmost importance. Wider doors on head-end cars are also of considerable assistance in speeding the transfer of lading, but at the expense of usable space in the interiors of the cars.

The proper organization of the station forces must be a major part of any program to minimize head-end delays. Not only must there be an adequate number of men available but they must be trained to perform their work quickly. Baggage trucks should be loaded and properly spotted before trains arrive. In stopping trains at intermediate points, care should be taken to spot mail, baggage and express-car doors at designated locations on the platform so that hand trucks for the unloading and loading of traffic can be placed where they can be pulled alongside car doors with minimum delay.

Where trains are long and contain passenger carrying cars for several destinations, it is sometimes desirable to provide some sort of spot marking for the guidance of passengers so they will not be required to walk two or three car lengths to find the right cars, and so they can be received at more than one door.

Planning Switching

The switching of passenger trains en route is frequently the cause of serious delay and must be watched closely. After it has been decided that a passenger train is to be broken up at a station, careful study of the consist should be made to keep the number of switching moves to the minimum. Often it is possible that all of the cars to be set out at any one point, including head-end cars, coaches and parlor or sleeping cars, can be kept in one group so that a simple set-out can be made. In other cases the passenger-carrying cars to be set over can be grouped and handled on the rear of the train so they can be cut off on the main line at the junction point, clear of the junction switch. In such cases the head-end cars are also blocked and are set out on a convenient track, which should be so located that the branch-line locomotive can back directly onto these cars and then shove the entire block back to the passenger cars left standing on the main line.

At least one road which uses the latter method places a dining car in such position that the arriving head-end cars are coupled to it on the forward end. On this line the entire operation of stopping, receiving and discharging passengers, setting out cars, coupling the trains again, and making the necessary brake tests, requires only five minutes for the primary train and seven minutes for the branch-line train, figured from the arrival time of the primary train. These figures are actual performances, not merely scheduled time. Needless to say, such a performance requires not only careful planning of the consist of the train, but also close supervision to see that the necessary car inspectors, trainmen and other employees are at their posts and ready to begin work

immediately upon the arrival of the train.

Unfortunately, at many points the unions are insisting that switch engines handle all pick-ups and set-outs by passenger trains, a practice which involves extra moves when switching the forward end of a train, either to enable the switcher to couple to the road locomotive, or to wait for the road engine to be detached before switching can begin. Railway managements have a definite responsibility to do all in their power to prevent the continuance or the growth of such practices, as they can only lead to serious train delays which passengers, especially in the present rapidly developing competitive era, will not tolerate.

Avoid "Bunching" at Stations

Another source of station delays, and this applies to the time required for the inspection and servicing of trains and locomotives, as well as to the receipt and discharge of traffic, lies in the "bunching" of trains at stations. In building passenger train schedules, most railways try to avoid having several trains in a station at one time. If trains are bunched at key stations, either because of their schedules or because of delays en route, one or more are likely to be slighted because of lack of sufficient personnel to handle more than a limited number of trains at one time. Further, the transfer of mail, baggage and express is heavy, fatiguing work, and if there is too great a concentration of it within a short period of time, employees become overtired and tend to lag. Likewise, when trains follow each other too closely, the leading train will delay the others whenever it makes a station stop by approximately the duration of the stop, although it may be able to make the same running time as those following.

Supplying water and fuel to steam locomotives must be done quickly if high-speed schedules are to be maintained

Like prompt switching and station work, the prompt servicing of trains and locomotives is dependent on careful planning and constant, alert supervision. Regardless of the type of power used, if runs of 300 miles or more are operated, the locomotive must have a certain amount of attention, if only for inspection and to secure additional water for train heating and hot water in cars.

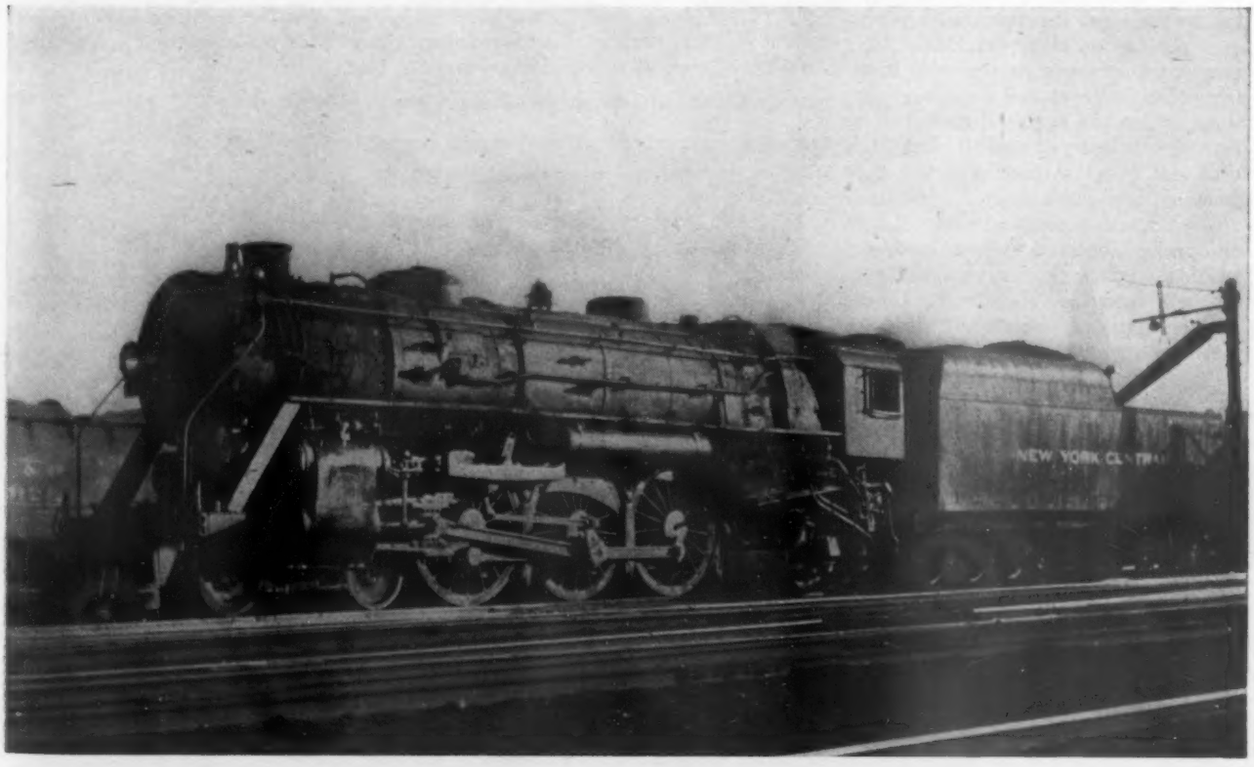
Service Delays

One of the principal advantages of Diesel power—and of electric power on those few roads where it operates over long distances—is the elimination of delays arising from frequent water and fuel stops and from cleaning fires. But the Diesel also requires fuel and water, although not so frequently as the steam engine, and unless proper facilities are provided for delivering them at stations en route, serious delays may arise from this cause.

Convenient Service Facilities

Because of the absence of dirt when taking on Diesel fuel and the ease of piping the fuel to points where it is needed, it is common practice to provide fuel and water outlets at both ends of the station platforms at selected intermediate terminals where stops to change crews or to inspect trains are required. Facilities for supplying sand may also be provided at such points. Assuming that such facilities are made available, it is necessary that they be so designed that they can deliver the required amount of fuel, water and sand in the minimum of time at one spotting of the locomotive, and that they are in condition to perform their functions as soon as trains arrive.

Where steam locomotives are in service, water becomes a more difficult problem. A number of roads, it is true, have for many years provided some of their lines with track pans to permit water to be taken without stopping, but this is an expensive procedure and can hardly be justified economically unless there is a heavy volume of traffic. A more common procedure is to enlarge tenders so they can carry sufficient water to enable trains to run from terminal to terminal, or to an important station where they must stop



for traffic reasons, without taking additional water. Where water is taken, it is the usual practice to provide water columns at both ends of the station platform so station work and the taking of water can be performed simultaneously. Where this is the practice, it is, of course, necessary that the water columns be properly located and that they afford sufficiently rapid flow to tenders to keep the time of watering operations within that required for station work.

Taking Fuel

Although water must usually be taken more often than coal, the problem of taking on the latter is somewhat more difficult because of the higher cost of the facilities involved and the dirtiness of the operation. Unless train schedules permit unusually quick turning of locomotives, or unless there is a considerable surplus of usable power, it is usually necessary to run passenger locomotives long distances, rather than to change them at each terminal as was once the case. This, necessarily, calls for refueling operations enroute. Since coaling stations cannot be located in the immediate vicinity of passenger stations, such operations invariably entail extra stops. Again, it is necessary to see that the required volume can be delivered quickly and that the men and equipment which are to perform the task are ready to begin work immediately upon train arrival.

In territories where two-engine trains are common, it may be found desirable to follow the practice of one line which provides facilities for fueling and watering both engines simultaneously. Whenever possible on single-track lines, this same road arranges its timetable meeting points to be at fuel and water stations, which are equipped to deliver to both the main track and to sidings on each side of it, so that the time lost in meeting opposing trains is partially utilized in taking coal and water. Where oil-burning locomotives are used, the problem is much simpler, as a tender of oil will provide considerably more mileage than one of coal, and stops for fuel are, therefore, less frequent. As in the case of the Diesel, oil fuel for steam engines can be piped to passenger stations and the engines fueled while other work is being performed.

A major source of delay where coal-fired steam locomotives are used is in cleaning fires at intermediate terminals. Unfortunately, coal-burning locomotives develop large clinkers during the course of a run over a division, which must be removed from time to time if the firebox is not to become so choked up for lack of air that it will not provide sufficient heat to make the steam required. Unquestionably, the kind of coal burned and the drafting of the locomotive have a considerable effect on the amount of clinker that is formed, but these matters are usually outside of the control of the local forces, and often of the road itself, since coal varies considerably in its properties and changes in the drafting of locomotives to suit the varied coals which may be burned during the course of a through run is not practical. On the other hand, the skill and attitude of the fireman also have much to do with the amount of clinker formed, and consequently on the time required to clean fires.

The latter, of course, is directly a matter of local supervision. It is not enough that a fireman keep a sufficient fire to bring his train into a terminal on time. He should also be required to keep the best fire possible at all times, including the last few miles of his run, so that it can be cleaned without excessive delay. A fireman lacking interest in his work is often the cause of delay that is charged to the local mechanical forces for cleaning of fires. On the other hand, a good fireman can shorten the time required for cleaning fires by several minutes.

Inspection Important Too

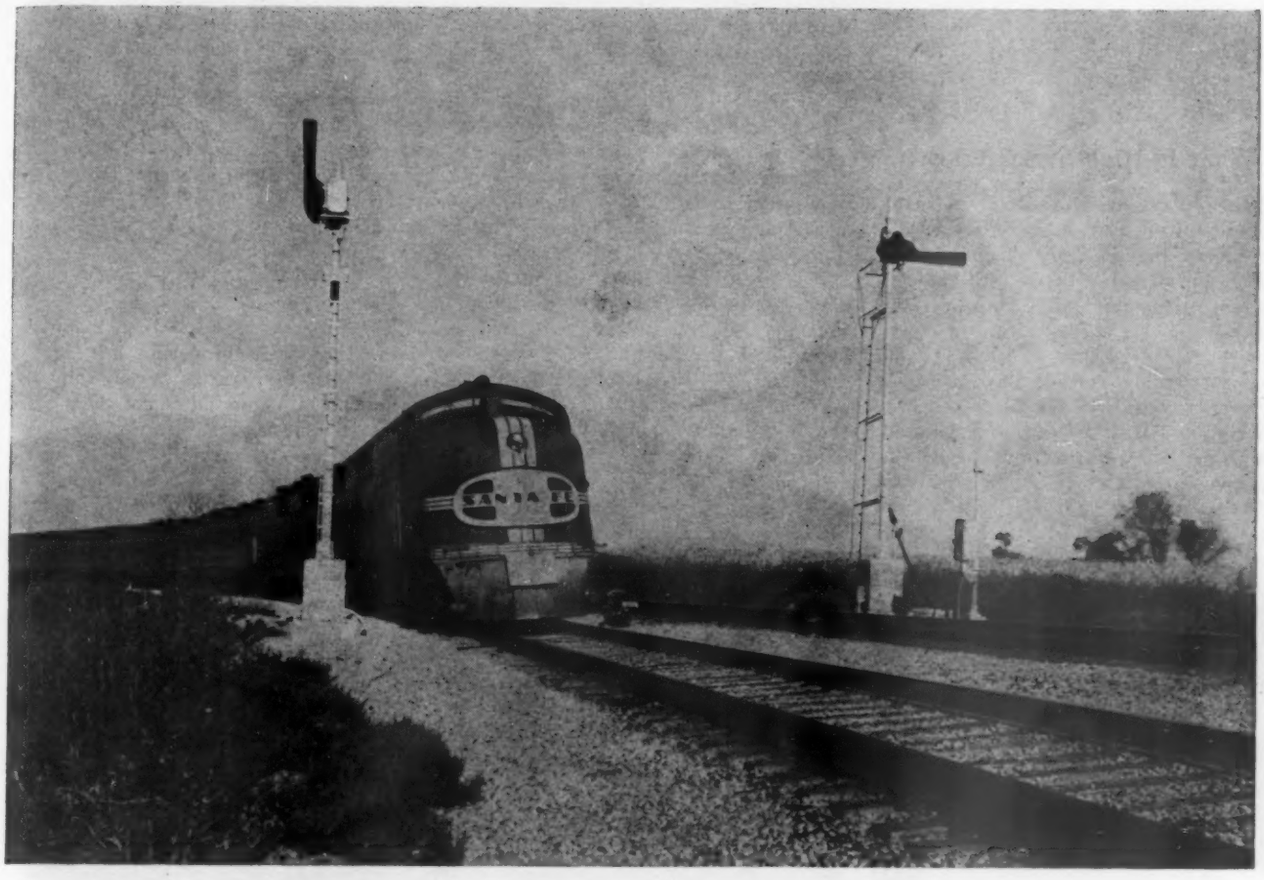
When a passenger train arrives at an inspection point, there must be on hand a sufficient corps of car inspectors, car department helpers, locomotive inspectors, fire cleaners, etc., to service the train promptly. A supply of brake shoes is frequently scattered along both sides of the track at such points for prompt replacement of worn shoes, and a supply of air brake and steam hoses is usually kept nearby. A convenient source of tools is of equal importance. A good carman can perform wonders with a hammer alone, but he can do a better and quicker job of emergency repairs if a supply of the proper tools is readily available.

Where modern trains are longer than the trains for which existing watering facilities were designed, it is sometimes possible to water them in sections, assigning one portion to one terminal and the other to the next service point. At night, supplying water to cars can often be eliminated altogether. The extent to which this can be done varies between railroads, and even between trains on a single road, and it is a matter that can only be worked out by local, on-the-ground supervisory forces.

As indicated at the outset, there is no panacea for overcoming train delays, whether caused by stops for traffic or by stops for operating reasons. In some instances separate mail and express trains will be practicable, in others not; some roads may substitute Diesel power for steam, others oil burners for coal burners; certain lines have split train servicing between successive stations, while still others may have adopted methods not considered here. Nevertheless, there is one factor that is common to the problem on all roads—proper supervision. Good supervision must start at the top, with a sincere desire made evident by 100 per cent backing of supervisors in their actions by top management, and by that management's insistence that supervisors do their jobs. Once this is done, improved performance is certain to follow, even though the physical plant is not always ideal. Good management can make even the most obsolete facilities function better than poor management can operate the best.

* * *

An Alco-G. E. 1000-hp. switcher pulls a string of cars through the car washer in the Burnham yard of the Denver & Rio Grande Western. As the locomotive enters the washer sprays are turned on and six rotary brushes, driven by four 3-hp. and two 2-hp. 1800-r.p.m. G. E. vertical motors, wash the equipment



To permit the high speeds required to meet competition the tracks must combine heavy-duty construction with a high standard of maintenance

Building Speedways for Streamliners

Progress is being made against obstacles in providing tracks having the necessary properties for the fast service contemplated. Station modernization slowed by restrictions

THE efforts of the railroads to raise their fixed properties, especially their tracks, to the high standards of construction and maintenance required for high-speed service is proving to be a slugging match between stubborn opponents. In one corner are the engineering and maintenance forces of the railroads, who are spurred by the realization that the success of the railroads' plans to cope with growing competition is at stake.

In the other corner is the embodiment of all the obstacles opposing efforts to achieve and maintain the higher standards required for the fixed properties, these obstacles including continuing shortages of materials and men produced by mounting wages and costs without commensurate increases in freight rates.

The opponent packs a terrific wallop, which at times feels suspiciously as if there were a horseshoe concealed in each glove. It is a grudge fight with a long background of feuding between the contenders, going back to the early years of the depression when, with the introduction of the first streamliner, there came the realization that, if the full potentialities of such trains were to be realized, the tracks and other properties would have to undergo a far-reaching process of strengthening and refinement. The contest is hard, and it promises to be a long one, but there can be little doubt that the railroads as a whole are well on their way to reaching a decision over their opponent; that is, practical achievement of the goals they have established for themselves in preparing their properties for faster train service.

The traveling public wants high-speed transportation, but at the same time it is demanding the utmost in safety, comfort and dependability of service. In attempting to satisfy these demands the railroads have recognized that there are practical considerations which place an upper limit on the maximum permissible speed to be hoped for. While the goal in this respect varies somewhat among different railroads, indications are that many of them are preparing their tracks and bridges to permit maximum speeds in excess of 100 m. p. h., giving due consideration to the necessity of main-

taining such speeds for long distances without slow-downs in order to obtain the greatest possible reduction in station-to-station time.

What Is High-Speed Track?

The 100-m. p. h. railroad is vastly different from one designed for speeds no higher than, say, 75 m. p. h. One of the principal differences is in the weight of the rail; while 90-lb. or 100-lb. rail may be adequate for the lower speeds, rail weighing at least 112 lb., and preferably considerably more, is generally considered necessary if speeds as high as 100 m. p. h. are to be allowed. With the larger rail sections there must, of course, be a corresponding increase in the strength and efficiency of all the other elements of the track structure, not overlooking the necessity of an adequate free-draining ballast section supported on a roadbed that has been endowed with all the properties necessary to a high degree of stability under the loads imposed.

Obviously, the advantage of the stronger track would be at least partially nullified if bridges with inadequate load ratings are allowed to remain in service; if excessive curvature is not reduced or eliminated in accordance with judiciously-planned programs; and if all steps possible are not taken to reduce delays or slowdowns arising from other causes, such as slides, unstable track, and bridge and track washouts. A trump card held by the railroads in competing with other modes of transportation is their superior dependability in all kinds of weather, and this asset must be preserved and enhanced. In converting a railroad for 100-m. p. h. operation the speed factor necessitates certain other alterations, aside from those mentioned, including appropriate changes in the spirals and superelevation of curves, the respacing of signals, adjustment of warning systems at grade crossings, and the installation of high-speed turnouts at certain locations.

From the foregoing it is apparent that the preparation of a railroad for the operation of trains at substantially higher speeds, with the aim of achieving the maximum reduction in train schedules, is a major undertaking requiring long-range planning and many years for complete execution, the rate of progress being influenced by many factors such as the availability of funds and the ability to obtain the necessary materials and labor to do the work. Along with the higher construction standards required for higher speeds goes the necessity of maintaining the tracks to greater refinements in line, surface and cross level—this being necessary to insure maximum safety and comfort at the increased speeds. As a consequence, plans for achieving these higher standards of maintenance must be considered carefully in the overall picture, to the end that this objective can be accomplished at minimum expense.

Progress Varies

The progress that has been made in converting their properties for high-speed operation varies widely among different railroads. Many of them had achieved substantial advance in this direction before the outbreak of war, while others had barely made a beginning. During the conflict, with the railroads preoccupied with the problem of keeping their properties in condition to handle the huge load of war traffic in the face of severe material and manpower shortages, the long-range plans of many railroads for building up their properties were necessarily slowed considerably. However, while the new rail that the railroads were able to obtain during the war period was far less than was needed for replacement purposes in view of the heavy traffic being carried, much of it consisted of the heavier sections, laid to replace lighter rail, and to

Example of a modern waiting room for railroad patrons. The station is that of the Chicago, Burlington & Quincy at Burlington, Iowa

the extent that this occurred progress was registered toward the higher track standards needed to meet future competition.

To a certain extent also the railroads were able to proceed with their programs for reducing curvature and grades, replacing restrictive bridges, and stabilizing their roadbeds through the various expedients now in use for this purpose, although, in view of the obstacles imposed by war-time conditions, progress was painfully slow, and the universal hope among railway engineering officers was that, with these obstacles removed with the coming of peace, the rate of progress could be materially speeded.

To some extent these expectations have been realized. Line-change and curve-reduction programs are going forward, quantities of new and heavier rail are being obtained and inserted, substantial progress is being made in carrying out track stabilization programs, and much other work is being accomplished. However, as already indicated, such improvement programs have not advanced as rapidly as desired because of difficulties encountered in obtaining many of the necessary materials, particularly rail, and because difficulty is still being experienced in obtaining the labor required to do all the programmed work. In addition, an old and familiar enemy of adequate and improved maintenance programs has made its reappearance, namely, an insufficiency of funds to do all the work considered necessary, which is traceable, of course, to the artificial situation in which, while railroad business has continued at a relatively high level, the roads have been forced to curtail expenditures because they have been deprived of the necessary increase in their freight rates to compensate for higher wages and material costs.

Rail Program Cut 72 Per Cent

A few examples will serve to show what the railroads are up against in carrying out improvement programs. One large road that is vigorously pursuing a program for converting its main line for high-speed operation had contemplated laying 500 miles of new rail this year. However, because of the steel shortage, this road feels that it will be fortunate if as much as 190 miles of new rail can be obtained and laid. Another company, which had planned to carry out large rail-renewal and out-of-face surfacing programs in 1946, has found that it will not be able to come anywhere near completing these programs, primarily because of a shortage of labor. On still other railroads the principal limiting factor has been the necessity for curtailing expenses. Looking at the situation from another angle, it is apparent that, although these examples are cited to illustrate the obstacles being encountered, they indicate equally well the progress being made.

The A. C. L. Program

Other examples can be cited to show the nature and extent of the work that is being done in preparing the tracks and other structures for higher speeds. Probably the most far-reaching track-improvement project undertaken in recent years is that which the Atlantic Coast Line has had under way since the latter part of 1943, and which is expected to be substantially completed next year. This program is also illuminating for the reason that the new track standards adopted are typical of those that are considered necessary and adequate generally for the higher train speeds contemplated.

The new standards for high-speed main-line track on the A. C. L. include end-hardened 131-lb. rail, joined by 36-in., 6-hole, 100-per cent headfree joint bars and laid on double-shoulder 14-in. by 7¾-in. tie plates, with the fastenings on tangent track consisting of two gage spikes and two or more hold-down spikes for each tie plate. On curved track and on bridges, full spiking is generally used. Ten anti-creepers are applied per 39-ft. rail, eight against the current of traffic, and two to prevent movement in the opposite direction. Since 1940 nine-foot ties have been standard on this railroad, and care is taken to apply an adequate section of crushed stone ballast.

From 1943 to 1946, inclusive, the track-improvement program on the A. C. L. has included the laying of 838.82 miles of 131-lb. rail, the insertion of 5,923,162 crossties in renewals, and the placing of 1,706,612 cu. yd. of crushed stone ballast, 150,626 cu. yd. of washed gravel ballast, and 68,772 cu. yd. of slag ballast. Supplementing the track improvement work have been extensive programs of bank widening, ditching and right-of-way grading, of strengthening and renewing bridges and eliminating trestles, of modernizing track signals and interlocking plants, and of carrying out such other work as has been considered necessary to convert the main line of the railroad into a veritable speedway.

Line Improvement Programs

Among the line-change, curve and grade-reduction projects now under way, one of the most outstanding is that being carried out by the Chicago, Rock Island & Pacific on its "Golden State" route, extending from Chicago through Kansas City to California in connection with the Southern Pacific. Already in an advanced stage, this undertaking involves five separate line-change projects, and contemplates the construction of a total of about 80 miles of new track and roadbed at a cost of approximately $12 million. In this work curves are being reduced from as much as 7 deg. to less than 1.5 deg., and grades are being reduced from as much as 1.6 per cent to ruling grades of 0.5 per cent, with substantial savings in distance also being accomplished. As recently as October 21 it was announced that a further 16-mile segment in this line-relocation program had been completed.

Probably one of the most comprehensive curve-reduction programs to be undertaken recently, measured by the proportion of the total main-line mileage involved, is that which the Nashville, Chattanooga & St. Louis is getting under way. Two contracts for this work have recently been awarded, one for the reduction of curvature to two degrees or less on the Chattanooga division, extending between Chattanooga, Tenn., and Nashville, and one for the reduction of curvature to two degrees or less on the Atlanta division, which extends between Chattanooga and Atlanta, Ga. A third project now being prepared will reduce curves to two degrees or less between Memphis, Tenn., and Bruceton on the Paducah and Memphis division. When these projects, which will entail a total expenditure of $2,053,000, are completed, there will be little curvature remaining above two degrees on the main line of this railroad between its western terminus at Memphis and its eastern terminus at Atlanta.

Removing Local Obstacles

Such projects as those on the Rock Island and the N. C. & St. L. are intended to effect improvements in alinement or grades on entire divisions or territories. Another type of project in this category is that of a more limited nature undertaken for the purpose of eliminating local or isolated obstacles in the way of higher speeds. Examples of this type are afforded by several contracts recently awarded by the Chesapeake & Ohio for line-change and related work on the Mountain subdivision of its main line. There are five separate projects in this group, which will involve a total expenditure of more than $750,000. Two of the projects entail line changes only, one a line and grade change, one a line change involving the construction of a new bridge, and another a line change that includes the conversion of a tunnel into an open cut.

Illustrative of those types of projects that are carried out for the purpose of eliminating or reducing traffic delays due to washouts and related occurrences is that by means of which the Missouri-Kansas-Texas has established a new crossing of the North Canadian river near Eufaula, Okla. Constructed at a cost of $500,000, the new crossing, which

stretches for two miles across the river bottom and main channel, is expected to eliminate difficulties due to high water at this location which, in the past, have resulted in many interruptions to traffic.

Adequate, But More Needed

It is thus apparent that, in spite of the difficulties being encountered, considerable progress is being made by the railroads in bringing their properties up to the standards required for high-speed operation. In this work the general opinion of engineering officers is that the heavy-duty track construction prevailing on many thousands of miles of main-line track is adequate for the higher speeds contemplated for the foreseeable future, the problem being to extend these standards to additional trackage as required by the railroads' plans for broadening the scope of their high-speed service. This point was emphasized by John W. Barriger, III, president of the Monon, in a recent address. Mr. Barriger phrased the problem as follows:

"While the *best* American railway standards and practices are very high and entirely adequate, *too small a proportion of the entire main-line mileage is developed to be all-inclusive of these optimum conditions.* Solution of the railway problem necessitates that main-line mileage be brought up to these standards except where mountains or other extraordinary physical obstacles prevent —and even in these circumstances, modern engineering opens up large vistas of improvement."

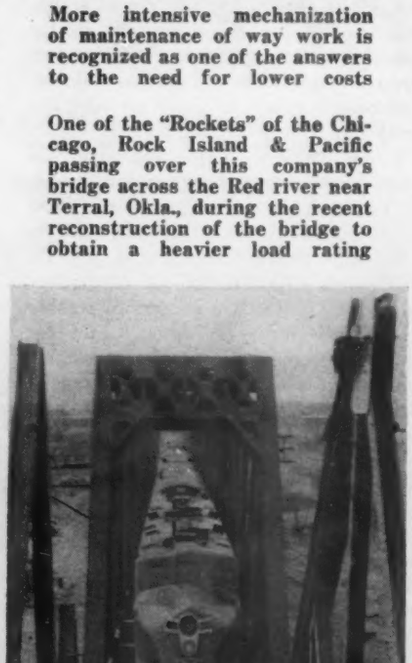
Keeping an Eye on Costs

While working towards the higher standards of track construction and maintenance necessitated by high-speed operation, railway engineering officers are fully mindful of the fact that these objectives must be achieved while at the same time keeping maintenance costs to a minimum. Consequently they are not overlooking the fact that a concomitant feature of the heavier track construction required for high speeds is the fact that the increased stiffness afforded by the heavier rail sections produces substantial savings in the amount of labor required to maintain track. That this statement is based on more than mere theory was demonstrated by F. R. Layng, vice-president and chief engineer, Bessemer & Lake Erie, in an address before the recent convention of the Roadmasters' and Maintenance of Way Association.

After pointing out that his road adopted 130-lb. rail in 1917, 131-lb. rail in 1934, and the 152-lb. section in 1939, with about 25 per cent of the main tracks being relaid with rail of the latter weight by the end of 1945, Mr. Layng quoted figures showing that a marked reduction has occurred in the number of man-hours expended on track maintenance in recent years as compared with the years when lighter rail was being used. Specifically, the number of man-hours required for this work in 1939 was only 39.3 per cent of those required in 1917, while in 1945 the percentage dropped further to 35.7. According to Mr. Layng, this decrease has occurred in spite of the fact that the railroad's standards for track maintenance have been steadily raised, and that tonnage, wheel loads and speeds have all increased. He added that the heavier rail sections not only have a beneficial effect on track laying and surfacing but also on practically every other element making up the track structure, with corresponding reductions in labor costs.

Many other measures are being adopted by the engineering and maintenance forces in their efforts to keep expenses under control as one means of strengthening the railroads' hand in dealing with competition in the passenger transportation field. In a discussion of this aspect of the problem in his address, Mr. Layng advocated closer supervision of maintenance of way work; more intensive utilization of maintenance of way work equipment, pointing out that on one highly-mechanized rail-laying job, the output per man was doubled over what it had been without the use of machines; the adoption of every conceivable expedient for extending the service life of materials; and the retirement of unused facilities.

More intensive mechanization of maintenance of way work is recognized as one of the answers to the need for lower costs



One of the "Rockets" of the Chicago, Rock Island & Pacific passing over this company's bridge across the Red river near Terral, Okla., during the recent reconstruction of the bridge to obtain a heavier load rating

The Passenger Station Problem

Aside from the problem of placing the fixed properties in condition to permit train schedules to be shortened in accordance with the railroads' plans to meet competition, and of doing what is necessary to reduce maintenance costs to the minimum, also with the competitive factor in mind, there is one other aspect of the problem of meeting competition that concerns the fixed properties. This is the need for bringing the passenger stations and other passenger-handling facilities of the railroads into harmony with the many new and colorful streamlined trains that are being introduced into service as fast as they can be obtained.

Nearly all railroads are well aware of the inadequacy of many of their passenger stations and are eager to remedy this situation by replacing numbers of them with new buildings of modern construction, or by modernizing the existing structures, recognizing that the work in both categories will be greatly facilitated by the availability of a wide selection of modern finishing materials in attractive color combinations, augmented by new developments in lighting fixtures and by many other features of recent introduction that can be employed to pro-

mote the comfort and convenience of passengers.

However, the passenger-station modernization programs of the railroads are grinding along in low gear at present, largely because of the regulations of the Civilian Production Administration, which forbid building construction or modernization without specific authorization, with the exception of specified types of small jobs. Although railroad building projects costing $15,000 or less are exempt from the regulations, this fact contains little comfort for the roads, because any station construction or improvement project costing no more than this amount is too small to be of any great consequence, especially in view of present-day costs of materials and labor. Even so, there are a number of instances in which the C. P. A. has extended authority for the construction of sizable railroad stations. For example, only recently the Erie obtained the authority to proceed with the construction of a new passenger station at Akron, Ohio, which, to cost in the neighborhood of a half million dollars, is expected to be completed next spring.

Some Work Under the Wire

In addition, the railroads have been able to carry out, or have under way, a considerable amount of station construction and modernization work that was undertaken prior to the effective date (March 26, 1946) of the C. P. A. regulations. Among the larger undertakings in this category is the project for modernizing the Fort Street Union station at Detroit, Mich., at a cost of $500,000. Used by the Pennsylvania, the Pere Marquette and the Wabash, this station is being revamped with the primary objective of removing many of the functions now occupying the main floor, as not essential to the welfare of the traveling public, to a newly-constructed second floor which will be provided by erecting a new ceiling over the waiting room at a height of one and one-half stories. The work will also include the building of a new train gate wall with large and direct exits at its ends and six large doors leading into the waiting room. Another large station modernization project presently under way is one involving the Dearborn station at Chicago, the reported cost of this project being well over a half million dollars.

In the category of smaller stations of recent construction is one built by the Chesapeake & Ohio at Prince, W. Va., a point on the scenic main-line route of this road between Washington, D. C., and Cincinnati, Ohio, on which it is expected that streamlined passenger trains will be placed in service next year. In some respects the Prince station represents an advancement over structures that were only recently considered the last word in railway passenger stations, and it may well be that this station has established a pattern, at least in some respects, for the design of future stations.

Among the more advanced innovations incorporated in the Prince station are solar orientation, radiant heating, and ultra-violet lamps in the lavatories as a protection against bacteria. It also incorporates fire-resistant construction, a train-announcing system that is extended out on the platform, fluorescent lighting fixtures, and interior appointments and daylighting which insure the utmost convenience and comfort for the traveling public. Architecturally, the structure deliberately avoids exterior ornamentation for stylistic values that are considered of more enduring popular appeal, employing instead a simple pleasing treatment that is designed to harmonize with the streamlined passenger trains that are to be placed in service on the line through Prince.

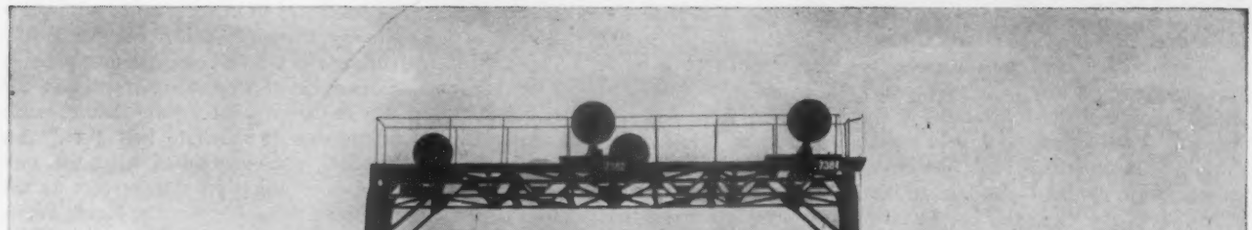
In the realm of station modernization there are a number of subsidiary or related trends that should be mentioned. One of these is the practice, particularly noticeable at some of the country's larger passenger stations, of making a special effort to assure the comfort and wellbeing of women patrons by instilling a restful, club-like atmosphere in the facilities provided for them. This is done through the judicious use of upholstered furniture, floor-lamp lighting, draperies and carpeting, all conforming, along with the walls and ceilings, with an attractive and restful color scheme. Outstanding examples of this trend are the recently renovated women's lounges at the Union and Chicago & North Western stations at Chicago.

Another trend related to station modernization is that of providing city ticket offices designed in accordance with present-day theories of merchandising and with the idea that, being the first point of contact between many patrons and the service they contemplate using, such offices can do much to help "sell" this service. An example of what the railroads are doing in this respect is the uptown ticket office that the North Western recently opened at Milwaukee, Wis. Some of the features of this facility include an illuminated advertising sign outside; prominent display of the name of the railroad on the exterior in an attractive manner; the use of a modern material in the railroad's colors for finishing the store front; a modern open S-shaped ticket counter which is given emphasis by means of mirrors so placed that it can be seen readily by passersby through plate-glass windows; and an otherwise attractive interior which makes full use of modern materials and furnishings, all combined to form a harmonious whole.

Such undertakings involving passenger stations and other passenger facilities as those discussed above are small in the aggregate as compared with the amount of work of this nature that has had to be shelved temporarily because of the C. P. A. regulations and material shortages. Almost every railroad has reposing in its files the complete plans and estimates for numbers of station construction and modernization projects, which range from small jobs entailing expenditures of only a few thousand dollars to projects comprising major undertakings, and many of these are awaiting only the removal of controls and the necessary materials before work is started on them.

* * *

Said to be the first Diesel-electric locomotive produced commercially in the United States, this product of the American Locomotive Company is still in daily service on the Central of New Jersey, which placed the locomotive in operation in 1925.



Train operation by signal indication in both directions on both tracks on the Southern Pacific

Modern Signaling and Communications Save Passenger Train Time

These facilities insure safety, shorten the overall time on the road and improve on-time performance, as well as provide conveniences of modern telephone communication on passenger trains

MODERN locomotives, passenger cars and improved track are all designed to permit increased speeds for passenger trains, but the desired benefits in shortened schedules between terminals may be defeated unless modern signaling and communications equipment is installed to reduce the number of unnecessary train stops and the duration of standing delays at sidings and junctions.

Having established fast schedules, an important item in the maintenance of on-time performance is quickly to clear up the causes for any unusual delays; this is one of the outstanding benefits possible in modern train communication. Another modern practice planned for service extensively in the near future is telephones for communication between the various cars and locomotives of passenger trains, as well as between moving trains and the homes or offices of passengers.

Railroad passengers may be assured that every possible precaution is being taken to prevent train accidents, a basic feature of the automatic block system being the track circuit, by means of which trains automatically control signals to maintain adequate spacing between themselves and following trains, as well as to stop opposing trains. As of January, 1946, about 101,159 miles of tracks in the United States were equipped with track-circuit controlled signaling, and extensive projects, now planned, will be pushed to completion as rapidly as materials can be secured. Unless unforeseen circumstances interfere, the remaining mileage not now signaled, on which fast through passenger trains are operated, will be so equipped within the next five to seven years.

As a general rule, passengers anxious to arrive at their destinations are especially aggravated by unnecessary train stops and extended delays on sidings or at junctions when waiting for other trains to pass. Many such delays are inevitable when using the out-moded practice of authorizing train movements by timetables and train orders. Under this system, trains are ordinarily operated according to the timetable, but if some trains are running late, train orders must be issued to authorize trains to move at variance with the timetable. Thus some trains lose time needlessly when waiting on sidings, because the dispatcher has no exact information as to the progress being made by trains, and there are not enough open offices to issue new orders to authorize trains to move, although time and idle track may be available to advance trains to stations beyond.

The average passenger may not know or care about the system which a railroad uses to authorize train movements; what he wants is satisfactory service.

An important aid in rendering such service on many railroads is in the replacement of the old timetable and train-order practice by the more modern system known as centralized traffic control. In this system the siding switches are operated by power machines, and the signals at these switches, under control of the dispatcher, authorize trains to: (1) move to the next town; (2) enter the siding; or (3) leave the siding and move to the next town. By means of lights on his control machine, the dispatcher knows the location of and progress being made by each train, so that he can advance trains for close meets. Where the sidings are considerably longer than train lengths, many meets are made without either train being required to stop. For the passengers this system of dispatcher-controlled signals prevents aggravating delays on sidings, and helps the train to arrive at its destination on time. To railroad managements there is the additional benefit that this modern signaling system effects savings in operating expenses which, with an average volume of traffic, will more than offset the carrying charges on the investment for the new signaling.

Engineman in Pere Marquette Diesel-electric locomotive using telephone to talk with wayside office

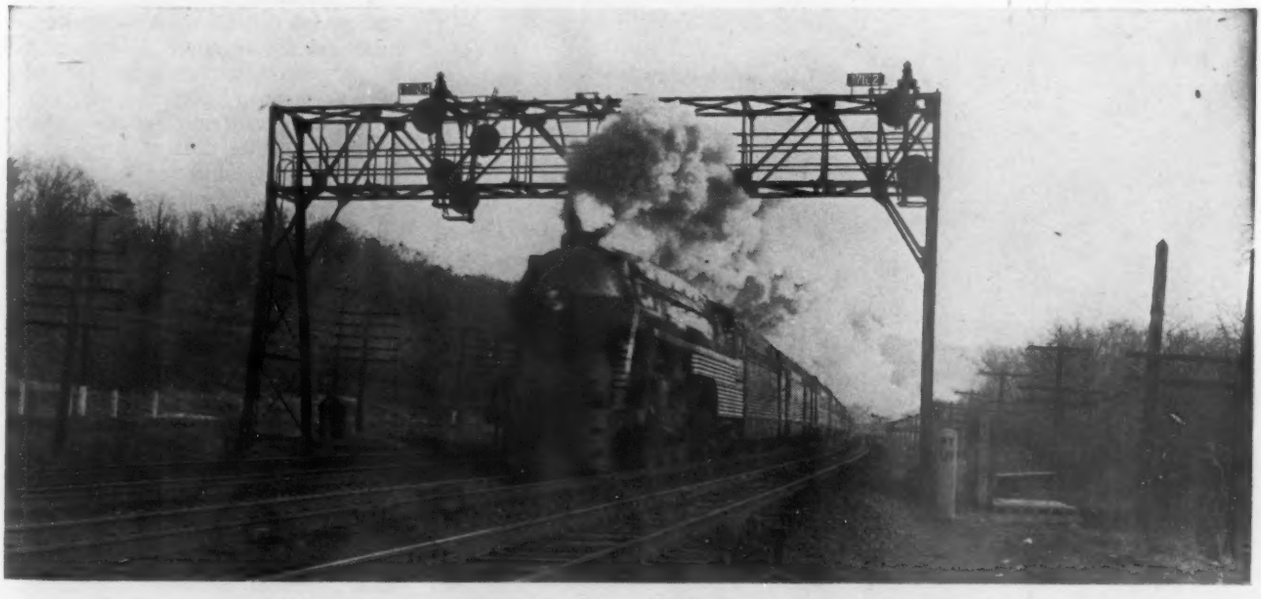
Modern Facilities

Along with other improvements, the railroads have been active in providing modern telegraph and telephone equipment, as well as circuits, so that prompt means of communication are available to serve passengers as well as to direct train movements and to handle the ever-increasing demand for message traffic and long-distance telephone conversation service between various offices throughout extensive railroad systems. By use of so-called carrier equipment, one line wire circuit can be used to carry many telegraph messages or telephone conversations simultaneously.

Based on developments during the war, the Western Union, in October, 1945, announced the adoption of a plan to use super-high-frequency, beamed relay radio equipment for the transmission of commercial telegraph messages between major cities, and at the same time announced a program to relinquish ownership of pole lines and line wires on railroads. In many territories these developments will make additional wires available for railroad use, so that even better service can be rendered to the needs of passenger traffic.

Train Communication

Train communication is a term which has been applied to radio or inductive telephone apparatus for conversation between the locomotive and rear car of a train, or between trains, as well as between trains and wayside offices. During the last 25 years numerous test installations have been made to demonstrate the fact that radio telephone



Modern passenger train and modern signaling on the New York Central

equipment could be used in train communication service, but it was not until recent years that equipment was developed to use high-frequency radio apparatus so that a sufficient number of channels were available for assignment to the railroads, as well as to numerous other services, in addition to ordinary radio broadcasting stations. In 1945 the Federal Communications Commission allocated frequencies to the railroads, and, since then numerous roads have made further tests and a few have made actual installations. Also, developments during the last 15 years have included the inductive system of train communication, which is confined to the right-of-way and requires no allocations from the Federal Communications Commission.

The new streamlined passenger trains being operated by the Pere Marquette between Detroit, Mich., and Grand Rapids are equipped with a two-way radio-telephone system for end-to-end and train-to-wayside communication. As soon as available, walkie-talkie equipment, operating on the same frequency as the present equipment, is scheduled for installation, by means of which a flagman on foot away from the train can talk with the engineman and the conductor.

Other railroads which have extensive train-phone installations in service or under construction include the Kansas City Southern, the Pennsylvania, the Atlantic Coast Line, the Missouri Pacific, the New York Central, the Denver & Rio Grande Western, and the Chicago, Rock Island & Pacific.

Miss Joanne Kelly, daughter of the governor of Michigan, using radio train telephone on a new Pere Marquette passenger train

Many well-informed people contend that radar, as applied on the sea and in the air during the war, is not applicable to the detection of approaching trains. A different idea as developed on one railroad is for a given locomotive to broadcast impulses, which, when received on the locomotive of another train, will cause impulses of another frequency to be sent to the first named locomotive. Electronic devices automatically measure the time between the sending and receiving of impulses so that the distance between two trains can be measured with sufficient accuracy to give warning in time for the trains to be stopped short of each other.

Increased safety can be accomplished on railroad divisions equipped with train communication by adding a supplementary device known as the slow-tone, by means of which the engineman of a train stopped under unusual circumstances can send a warning to other trains which may be approaching within a range of approximately five miles.

Telephones on Passenger Trains

Some of the newer passenger trains recently placed in service or scheduled for delivery soon have various adaptations of telephone service for passengers. Automatic telephone systems are available for intercommunication between the locomotive and certain cars on a train. For example, the conductor can call the engineman, or the flagman in the rear car can talk to the engineman. A sleeping car porter or the attendant in the observation car can call the dining car steward to determine when tables are available for passengers.

New day trains being constructed for one road are to be equipped with loudspeakers in each car, connected by a wire circuit to a transmitter in the conductor's office in the forward coach. This system is to be used to announce stations, to call attention to scenery or historical points along the route, and to reproduce music and other entertainment from record players.

The equipment on day trains being built for another railroad provides not only for communication between the engineman and conductor, as well as between trains and two or more wayside offices, but also arrangements which will permit passengers on the trains to carry on telephone conversations with their homes or offices. The radio train communication equipment will serve between the moving train and wayside offices, and conventional wire line circuits will serve beyond.

In C. T. C. territory on the Canadian National between Halifax, N. S., and Moncton, N. B.

Study Group Assays Passenger Outlook

A. A. R. researchers report that good business is in sight for years immediately ahead, and their appraisal of the longer future outlook indicates that the railroads should maintain leadership position if they have the courage "to stride forward as a leader should"

PASSENGER traffic prospects for the years immediately ahead "appear bright at this time," and the longer-run future outlook indicates that the railroad industry should maintain its leadership position as a passenger carrier if it has the courage "to stride forward as a leader should," proceeding on the basis of "careful and continuous planning" and exerting "unremitting" efforts to make its service "as marketable as possible." This "optimistic note" closes the report recently completed by the Passenger Traffic Division of the Traffic Subcommittee of the Railroad Committee for the Study of Transportation.

The latter is part of the research group sponsored by the Association of American Railroads, which has been functioning for the past four years under the general chairmanship of R. V. Fletcher, A. A. R. vice-president —research. F. J. Wall, vice-president of the New York, New Haven & Hartford, is chairman of the Traffic Subcommittee, while the latter's Passenger Division, which made the present report, is headed by F. H. Baird, general passenger traffic manager of the New York Central.

Members of Division

Other members of the division are: C. E. Bell, passenger traffic manager, Seaboard Air Line; E. P. Burke, passenger traffic manager, Pullman Company; C. J. Collins, general passenger traffic manager, Union Pacific; A. Cotsworth, Jr., passenger traffic manager, Chicago, Burlington & Quincy; T. B. Gallaher, general passenger traffic manager, Atchison, Topeka & Santa Fe; F. L. Jenkins, general passenger traffic manager, Southern; A. C. Linton, passenger traffic manager, Illinois Central; C. H. Mathews, Jr., passenger traffic manager, Pennsylvania; C. E. Peterson, vice-president, system passenger traffic, Southern Pacific; R. B. Rogers, passenger traffic manager, Erie; H. L. Schaeffer, general passenger traffic manager, Missouri Pacific; A. H. Seaver, special assistant to vice-president, New Haven; J. B. Sharpton, assistant passenger traffic manager, Atlantic Coast Line; J. F. Whittington, general passenger traffic manager, Baltimore & Ohio; G. U. Yager, general passenger agent, Louisville & Nashville. J. T. Webster of the New York Central was director of the study.

Indicating that the work of the various subcommittees has been coordinated, the present report makes references to findings of the subcommittees on Motor Transport, Air Transport and Economic Study. Use is made of the latter's prediction (noted in the *Railway Age* of June 1, page 1114) that railroad passenger traffic in 1950 will be at a 35-billion passenger-mile level, which would be greater than any year from 1927 to 1941, inclusive, though much below the wartime peaks of 1942 to 1945 and less than 1920's peacetime peak of 47 billion. At the same time the division quotes that part of the Economic Study Subcommittee's report which asserted that its passenger traffic forecasts "not only are believed to be attainable, but may well be increased by the application to passenger transportation of progressive methods of service and merchandising."

That finding, the present report says, "should serve to dispel the feeling, if one exists, that all of our good years are behind us." It adds: "While it is true we have never experienced as severe competition as we shall face in the future, it is just as true that the railroads never have been better prepared than they will be when intense competition for passenger traffic again becomes a fact. There is no reason why railroad passenger traffic volume should sink to a pre-war level if many plans which have been made are followed up by forceful selling methods, sustained enthusiasm and courteous service to go along with the new equipment."

The report as a whole reflects the comprehensive studies carried out by the division. It is a document of 354 mimeographed sheets, its 19 chapters covering all phases and angles of passenger service—from proposed improvements in high-speed streamlined trains and metropolitan terminals to comment on branch line passenger operations, and from consideration of the wants of dining-car patrons who are inclined to "gormandize" to suggestions for keeping non-selling ticket-office employees out of sight, lest they contribute to the impatience of queued-up ticket purchasers who might think the clerical workers ought to be on duty at the windows.

Meanwhile, the division had asserted in the report's foreword that "there is nothing static about the travel market, and it would be amiss to assume that the division of traffic among competitive transportation agencies is bound to follow a set pattern. Each transport agency has certain advantages, it is true, but many of them are retained only through constant improvement. To stand still in the pressenger traffic field is to retreat." The foreword goes on to describe the study generally as an attempt "to trace the historical background of our competitors, and point out certain steps the railroads might take to improve their service to the public."

Mail traffic is covered, but express, commutation traffic and fresh milk and cream traffic are not. "Express," the report explains, "has been covered in part in the study of the Merchandise Traffic Division of the Traffic Subcommittee. Commutation traffic is of interest to comparatively few railroads and, therefore, it was decided not to include it. Fresh milk and cream traffic is a specialized form of traffic with pronounced local characteristics and, consequently, would be more susceptible to study on a regional basis."

Economies and Competition

First of the report's 19 chapters is devoted to "economic and competitive factors." Consideration of data and forecasts of population trends and employment levels in their relation to passenger business there leads the division to conclude that the "close relationship" between national income and rail travel, which characterized the decade before the outbreak of the war, "will continue after the war"—although "the full weight of air competition is yet to be met." In the latter connection it is conceded that the railroads will continue to lose Pullman traffic to the airlines, but it is pointed out that the air lines, like the private automobile, create traffic that would not exist in their absence. And, meanwhile, the railroads "with substantial equipment replacements due, are well up in the van in the race to be ready when competition is fully resumed."

Reporting that the air transport of the future "has received more publicity perhaps than all other prospective transportation equipment combined," the division takes note of predictions of things to

come in air transport, ranging from "conservative ones to those which appear fanciful, but may prove otherwise in the end."

When it got around to summarizing the physical aspects of commercial air competition, the report found it probable that 50-to-100-place, high speed planes, with pressurized cabins to permit flying in the stratosphere, will be used on heavily traveled routes, while somewhat slower planes with less seating capacity (such as the 21-place DC-3) will be used for secondary main line and feeder services.

Prospective Air-Line Fares

"Air line fares," the report continues, "are expected to average between 4 and 5 cents a mile in the immediate future. All-weather flying will tend to become more practicable, but the Air Transport Command recently recommended against placing primary reliance on radar to bring it about. Severe weather will continue to be a problem, and especially where snow clearance is involved."

The inter-city bus of the future, as the division visualizes it, "will be considerably faster than present models and will have many features designed to promote comfort." In the latter connection, the division discusses such things as air-conditioning, better vision for passengers, individual radio sets, toilet facilities, more leg room between seats, and better springing.

With respect to the private automobile, the report notes how the auto has become "a vehicle of the people" and has created much travel. Also recognized is the convenience and flexibility of the automobile. "No other form of transportation," the report says, "permits a person to leave directly from his home without changing vehicles, carrying his clothing and other articles unpacked; to make last-minute schedule revisions; to deviate from a course at will; to stop at any time to rest, relax or eat; and to have the use of his own vehicle at the end of the trip. The informality of automobile travel, which enables a person to enjoy the comfort of old clothes and sports attire, is also a strong inducement. In addition, an unnatural restraint, often thought to be obligatory in the presence of strangers, is avoided."

Most Auto Trips Are Short

It is found that the bulk of automoble travel on trips of 100 miles and over has been concentrated in the 100-to-250-mile bracket. And the report doubts that the common carriers can hope to attract or regain much of this business—"except, perhaps, between large cities connected by congested highways." At the same time, it is stated that "above 250 miles, and increasing as distance increases, fatigue and nervous strain—arising from extended periods behind the wheel—make automobile travel progressively less attractive." And an estimate based on an 11-state check indicated that automobile trips above 250 miles involved 20 to 25 billion passenger-miles in 1936.

"This," the report adds, "would seem to be the travel which might be expected to lend itself to railroad cultivation to a far greater extent than short-distance travel, a substantial, if unknown, proportion of which is and will continue to be non-competitive. Of course, it cannot be said categorically that people will not use the railroad for short distance travel (other than commutation) any more than that they won't travel coast-to-coast by automobile.

"We can be reasonably certain, however, that the inherent flexibility of the automobile and its great convenience will continue to exert a strong influence, especially where the trip to be taken is a short one."

Mention is also made of the value of the automobile to the business traveler and of the fact that "even railroads provide company-owned cars and make mileage allowances to traffic solicitors and others." Considering that railroad employees are entitled to free transportation, their use of automobiles for both business and pleasure is "conclusive evidence" to the division of "the wide acceptance of the practicality and convenience of automobile travel." Data assembled by the Motor Transport Subcommittee on the "full cost" of operation of an automobile are summarized; but the division recognizes that the average motorist is little interested and generally keeps no record of his automobile expense.

Little Interest in Auto Costs

"In this connection," the report adds, "it is assumed that very few people would forego automobile ownership even if full costs were generally known. The fact that so many automobile owners were found to have incomes above a bare subsistence level in the studies made in 1935-36 by the United States Bureau of Labor Statistics lends considerable weight to that assumption."

Summing up on private automobile competition, the division says that it did not seek "intentionally to aggrandize the automobile," but it nevertheless recognizes that "in planning for the future, it is essential that we think objectively."

The chapter on "the intercity bus" points out that the railroads, which began to use buses in 1925 "at the start of the second decade of intercity bus operations," owned collectively "just a shade less than 10 per cent" of all buses engaged in intercity operations during the 1937-41 period.

Data on the growth of bus traffic are shown to point up the fact that during the depression years the intercity bus industry "became a competitor of considerable stature." Its business reached 10 billion passenger miles in 1937, but was under that mark in 1938 and 1939 with a rise again in 1940 to 10.1 billion. Each of the war years saw a new record set, the total for 1944 having been approximately 32.9 billion.

Characteristics of Bus Travel

An analysis of ticket sales made in December, 1942, indicated that bus travel, like automobile travel, is predominantly short-haul. It showed that 76 per cent of the passengers made trips of 50 miles or less while only 3.4 per cent traveled more than 250 miles, although these long trips accounted for 29.2 per cent of the passenger-miles. In comparative traffic results of the years 1936 through 1941, the division finds "some evidence that bus traffic before the war had become stabilized to some extent in its relationship to the level of coach traffic." In 1941 the intercity bus passenger-miles amounted to 81.3 per cent of Class I railroad coach traffic, excluding commutation. During the war years, bus lines' net operating revenue per vehicle-mile was "extremely favorable."

Factors which have increased the value of intercity bus service to the public are summarized in the report as follows: (1) Relatively low fares; (2) frequency of service; (3) convenience and accessibility; (4) service to points not served by rail; (5) scenic value; (6) technological improvements in vehicles; (7) improved terminal and rest stop facilities. Meanwhile, it is pointed out here, as it was in the chapter on automobiles, that highway transportation depends upon a network of good roads for its development.

"Expanded and improved highways," the report says, "have increased the scope of bus transportation, allowed it to reach more communities and provide faster service with increased comfort to passengers. Public aids, relative freedom from regulation until 1935, absorption of weak lines by stronger systems, and a general increase in efficiency have been of great importance to the bus industry in meeting railroad competition. These factors are of a primary nature and have permitted many of the forces to come into play which have increased the value of the service to the public."

The report points out, however, that long trips by bus "are neither as comfortable nor as fast as trips of comparable length by rail," adding that any promised increases in bus comforts

and speed "will be neutralized by the improvements which the railroads are making and will continue to make in their coach service."

Growth of Aviation

Coming to its consideration of "air lines and private flying," the report recalls the rapid development of aviation during World War I, and the "standstill" which characterized the period after that war until the passage by Congress on February 2, 1925, of the first Air Mail Act which "provided the stimulus needed to awaken interest in aviation as a business." Then followed the extensive government aids in the form of mail payments, provision of airports and aids to air navigation; and the tremendous impetus provided by World War II. To indicate the extent of public aids to air transportation, the report cites "Civil Aviation and the National Economy," a recent study issued jointly by the Department of Commerce and the Civil Aeronautics Administration which found: "Grand total cost to the federal government of air mail service, airways construction and operation, airport construction, civilian pilot training, research and other civil aviation programs is approximately 800 million dollars."

Without undertaking to minimize the appeal of air transportation in this air-minded age, the division nevertheless refuses to concede that the speed of the air lines cannot be offset to some extent by other advantages which the railroads can offer in the way of comfortable services with sleeping accommodations comparable to those of a hotel room on schedules which conflict as little as possible with normal business hours. Among other observations in this connection is that which points out that often the speed of air transportation merely affords the opportunity to spend the night in a hotel room at destination instead of in a Pullman room en route.

"In the past 10 years," the air transport chapter's summary says, "the air lines have made substantial progress in building their passenger traffic volume. Some traffic has been created, but much of it has been competitive traffic that would have been handled by the railroads in Pullman service. Fear probably has been the principal deterrent to even greater gains.

Some Offsets to Air Speeds

"Speed is an inherent advantage possessed by the airplane which cannot be offset completely. However, speed of flight is not reflected always in a comparable saving of time. Many airports are relatively inaccessible, which often prevents the realization of time-saving advantages on short trips. Moreover, the cancellation of flights, particularly in the winter months, frequently creates delays. The competitive fare situation, while it has resulted to a considerable extent from public aids furnished to the air lines, is one which must be faced realistically.

"Attractive fares, comfortable accommodations and other amenities of normal rail service, coupled with service which permits as much rail travel as possible to be completed between the end of one business day and the beginning of the next, are strong incentives for a person to travel by rail. Our principal air competitor for many years probably will continue to be the commercial air carrier. Private flying is not likely to offer serious competition as long as such a wide disparity exists between the personal plane and the private automobiles in the matter of utility."

It is stated that consideration of the sleeping car's place in the future requires attention not only to the equipment but also to the rate structure, including the rail fare applicable in Pullmans. And it is further suggested that some attention might be given to the matter of making the Pullman rate structure more uniform.

Comfort of Sleeper Unequaled

"In the sleeping car," the report also advises, "the railroads have at their disposal a travel conveyance which provides a standard of comfort not available to other forms of transportation. Although the competition of air lines and improved railroad coach service will continue, it is manifestly to the interest of the railroads to take all practicable steps necessary to retain a fair share of travel for their sleeping car services. Where the total travel costs in a sleeping car greatly exceeds that in a coach, the difficulty of preventing a substantial shift to coach travel is obvious. Such a shift, however, does not result in a loss of traffic." There can be little question that the reduction of air fares from 12 cents a mile in 1929 to approximately 4.5 cents a mile in 1945 has brought air line service nearer the mass transportation market, the report adds.

In discussing air-line fares further the report goes on to note the rise of two conditions "which may have an effect on the ability of air lines to cut fares indefinitely." They are "the question of the extent of future subsidies" and the "labor situation." The first is called "speculative," but the division thinks there may be "increasing pressure brought to bear to the end that all competitive transport agencies are accorded something approaching equality of treatment." With respect to the air line labor situation, it points out that strikes are beginning to come in the industry.

Much of the report's section on basic passenger fares consists of material submitted by regional subcommittees created by the division to report on the effect of basic fare changes on passenger traffic volume. For example, the report of the Trunk Line-Central Passenger Association Subcommittee recalled how the public failed to give the railroads credit for various special fare concessions made during the depression years when the basic fare was held at 3.6 cents per mile. Those special concessions, it is pointed out, brought the average revenue per passenger-mile down to 2.7 cents in 1932 and 2.35 cents in 1933.

The principal thing contained in the chapter on "coach equipment" is the possibility of a standard coach-car frame conforming to A. A. R. specifications as to strength. The report sets up basic specifications, "which might vary slightly according to material used and which do not preclude in any way further technological advancement." It asserts that they should meet requirements "in all cases save where special considerations or new developments, such as the 'Astra Liner,' may justify exceptional treatment."

The foregoing follows the report's prediction that the cost of building a post-war passenger car will be materially higher than that of the pre-war car. And it is contended that adoption of a standard frame should cut construction costs without inhibiting "a free play of ideas with respect to those features noticeable to the public, such as interior arrangement and exterior styling."

On the matter of passenger ideas and preferences, the report summarizes N. Y. C. and S. A. L. surveys which went into various matters relating to passenger comfort, interior decorations, and the exterior appearance of trains. In the latter connection, stainless steel "was preferred quite generally for sheathing, but most passengers were more concerned with those items identified with travel comfort." Mention is made of estimates that the railroads would require from 10 to 15 thousand passenger cars in the first five years after the war. The division thinks the top estimate "probably is much too high."

Its detailed discussion of what the new coaches may look like set down its own ideas and suggestions which it has heard with respect to such matters as standard coaches for commutation service, smoking cars, coach-lounge or recreation cars, toilet facilities, seats, luggage space, lights, insulation, air-conditioning, lockers, refuse receptacles, water coolers, floor coverings, windows, radio, public address system, designation of reserved seat coaches, and streamlined trains. The latter, it is found, "offer the railroads their greatest opportunity to attract a substantial

volume of traffic from other means of transportation and to operate a profitable passenger train service."

Streamliners Worth the Price

It is conceded that the initial cost of streamliners is high, but the report says that this "usually can be offset by an increase in daily train miles and a greater number of trips in a given period." It also suggests that where trains of this type are operated by more than one road between two important terminals, "the adoption of staggered, rather than identical, schedules enables the combined rail service to better compete with other forms of transportation service." At the same time it is recognized that passenger traffic to and from intermediate points, mail traffic, and connections at initial and final terminals, "are important considerations in determining the practicality of staggered schedules."

In its investigations of "sleeping, parlor and lounge cars," the division found "just as apparent, if not more so," the "same imagination and progressiveness which have characterized the efforts of car manufacturers in designing modern coach equipment." After observing that "this is as it should be," the report proceeds to suggest that "progress in the direction of providing the most efficient space utilization would seem to offer the most productive possibilities."

"Comfort and room to move about and relax," it continues, "are advantages we must preserve, and facilities for lounging and recreation should be provided."

A standard frame for sleeping cars is discussed and the division suggests that railroads and manufacturers cooperate on what the basic specifications of such a frame should be. While "further uniformity would be desirable," the division recognized the difficulty of securing "anything remotely resembling unanimity of opinion in regard to floor plans among passenger traffic officers and others directly concerned."

Would Have Fewer Car Types

It points out later on that 619 lightweight sleeping cars of 37 different types were in service at the close of 1944, adding that this "cannot be called even a start in the direction of standardization." The failure to reach agreement on restricting sleeping-car construction to a "very few types" is to the division a "strong implication" that "cooperation, if it is to be achieved, will be a 'give and take' proposition to some extent at least." Meanwhile, the report had made the expected prediction that sleeping cars with open section accommodations "will be replaced eventually by cars with room accommodations." Neither does the division expect that any open-section cars will be constructed for use in tourist-sleeper service, which will get enough equipment as tourist cars are released from troop service and open-section cars in standard Pullman service are "bumped down" to tourist runs.

The future of the tourist-sleeper business, the report says, "would seem to depend on whether enough passengers will be willing to continue to pay a higher fare than the coach fare as coach accommodations improve." The future of parlor car travel "will be governed to a great extent, as it has been in the past few years, by the steps taken in catering to coach passengers."

The chapter on "dining car service" describes modern dining-car types and kitchen and pantry facilities and discusses service from the standpoint of efficient kitchen and pantry facilities, attractive dining room appointments, and suitable, courteous, and properly-trained personnel. Consideration is also given to coach meal service and to the over-all effect of dining car service on the traveler.

Dining Service Must Be Good

"The importance of good dining car service cannot be over-emphasized," the report says in the latter connection. "Many travelers declare that their choice of one railroad over another results from the superiority of its dining car service; nor does any other element of railroad service afford a greater opportunity for good public relations work as a result of the close contact formed by the dining car employees and passengers. . . . A passenger expects courteous treatment at all times and there can be no relaxation of effort on our part to see that he receives it. . . .

"The air lines furnish free meals at considerable expense, while the railroads assess charges for meals served in dining cars in keeping with prices prevailing in the average good restaurant. Intercity bus lines provide for meal service by stops at eating houses along the route. The cost of providing railroad dining car service is very much greater than the cost of providing service in the average good restaurant; hence an operating loss almost invariably results. This loss, however, does not compare on a per capita basis with the cost to the air lines of furnishing free meals. In the future air lines will become more serious competitors of the railroads in the passenger field, and the railroads should strive for perfection in their dining car services. On the whole it may be stated that good dining car service can prove an effective instrument in the promotion of traffic, while poor dining car service can be equally effective in the opposite direction."

As a means of improving the efficiency of dining car operations, the report says that kitchen and pantry arrangements require the greatest attention. The all-electric kitchen is the synthesis of most of the individual improvements in the preparation of food and, if its operation proves to be practical in other respects, dining car efficiency will have taken a long step forward."

Diner Personnel

The dining-car personnel problem "is not an easy one," the report warns. "Refresher courses for returning veterans and the careful training of new employees will be found helpful," it adds. The division is of the view that any railroad's future plans for dining service should place "great emphasis" on training in courtesy and discipline "to counteract the rising tide of nonchalance so apparent during the last few years."

Recognizing that faster service "has in general proved remunerative, both by increasing traffic and saving equipment and manpower," the division says in its chapter on speeds that, "to the extent justifiable," improvements could be made in roadbed to permit generally higher speeds with safety and comfort; and modern power, trailing equipment and signal systems placed in service "to derive the fullest benefit from improved roadbeds." At the same time it advises that "almost as important and much less expensive, if not as spectacular, are the improvements which can and should be made to reduce the time spent by passengers in obtaining information, reservations and tickets."

In the interest of reducing the over-all running time of trains, it discusses the possibility of eliminating stops and reducing station delays by providing adequate manpower and loading equipment, by handling only the higher classes of mail on high-speed trains, and by constant checking and supervision of station work. Officers of competing lines are called upon to cooperate in arranging through cars, in making good connections, in adjusting schedules to produce greater frequency of service, "all as a means of meeting other than rail competition and reducing the congestion at union terminals."

Speed Increases Necessary

"The speed of the airplane," the report continues, "cannot be approached, but railroads have advantages to offer which, in many cases, may be more important than sheer speed. Preservation of these advantages—safety, dependability and comfort—is vital, and any attempt to increase speed which might tend to place one or all of them in jeopardy would be a serious mistake. Some increase in speed within limits set by safety and

comfort is necessary, however, if railroads hope to counter the effective speed of air travel. The fact that rail trips up to 1,000 miles can be completed outside of business hours is indicative that the task is not a futile one by any means. Increases in rail speeds which are instrumental in bringing more cities, within such a range, or perhaps one of slightly greater extent, will be a step forward in meeting air competition. Along with somewhat faster schedules, the increased comfort promised as more new cars with room accommodations become available, will be a strong offset to that air travel which saves little or no business time . . .

"With a firm belief that the speed advantage of the airplane can be countered to some extent at least, it is suggested that individual railroads, all having somewhat different problems to solve in this respect, undertake to expedite all services from the time a passenger enters a station at the start of his trip until he leaves the depot at destination. Greater efficiency and speed in making reservations, selling tickets and handling baggage, along with schedules which are dependable, and as fast as the preservation of safety and comfort will permit, are steps that should not be long delayed. While improved railway coach service should continue to more than meet the speed challenge of highway competitors in the intermediate and long-distance travel fields, faster local service and good connections with through main line trains are needed to make people in the smaller towns railroad-minded once again."

The chapter on "passenger traffic sales" discusses such matters as incentives, sales training, travel bureaus, ticket offices, mechanical aids to ticket selling, timetables, publicity and advertising, sales practices of competitors, the rail-auto travel plan, and arrangements for shipment of automobiles on the ticket plan in expedited freight service. There is a follow-through to a chapter on "suggestions for improvement of passenger traffic sales" which contains a discussion of the possibility of each railroad passenger traffic department undertaking a study of the following subjects and determining what, if anything, might be done to improve them: Selection of personnel; sales training; sales control systems and incentives; sale of tickets; time-tables; advertising.

Suggestions on Selling

As a means of facilitating such a study, the report proceeds to consider each of the subjects, setting out suggestions which the division thinks should be helpful. With respect to the selection of personnel, it is suggested that a more aggressive and enthusiastic force is needed; and while no general reorganizations are found necessary, it is stated that the need for reassembling passenger sales organizations dislocated by the war affords opportunities for desirable readjustments.

Timetables are called "a major medium of advertising and publicity," and the division makes 20 specific suggestions for consideration in the interest of time-table simplification and standardization. With respect to advertising, it is suggested that while the railroads will soon have more to offer than ever before, their competitors will be in a similar position. "Advertising," the report says, "can be most helpful in creating patronage for the many new trains which shortly will start to be on our railroads, and advertising appropriations should reflect the magnitude of the job to be done."

The division's consideration of "the sale of passenger traffic on credit" leads it into detailed explanations of various plans which have been proposed, including the travel credit card plan somewhat similar to the air lines' credit card plan; the so-called Swanson plan; and the railroad warrant plan. Latest developments in connection with the railroads' consideration of these proposals were outlined by W. H. Siddall, chairman of the Trans-Continental and Western Passenger associations, in an address at the recent annual meeting of the A. A. R. Treasury Division at Edgewater Park, Miss. The address was reported in the *Railway Age* of October 5, page 566.

Terminals

The chapter on terminals emphasizes the desirability of making station facilities for passengers attractive and convenient. "Cleanliness," the report says, "probably makes a more favorable impression on the traveling public than almost any improvement that might be devised." Also, it makes other suggestions as to information facilities, ticket offices, baggage-handling facilities, parcel checking, policing, concessionaires, and parking facilities.

The passenger traffic department is found to have a "vital interest in the construction, modernization, and operation of terminals."

On the matter of "train and terminal personnel," the report states that the quality of service accorded passengers by those employees "is even more important than train and station appointments." The need for careful selection of these employees is stressed.

Among other specific suggestions, the report advises that train service employees should be encouraged "to use judgment when problems arise and not assume an imperious manner in taking refuge behind rules, the reason for which may not be apparent to the passenger." Also, the report condemns "the not infrequent practice of train crews of treating the cause of delays as a professional secret not to be shared voluntarily and candidly with passengers."

Should Have Equal Rights in Air

As to the advisability of railroads entering other forms of passenger transportation, the report records briefly what has been done in the highway field. At the same time, it holds that the railroads should have an opportunity to engage in air transportation on equal terms with any other applicant; and it thus condemns the restrictive policies with respect to "surface carrier's" entry into the air field which have been adopted by the Civil Aeronautics Board. It is predicted that economies would result from joint rail-bus-air operations, but experience has shown that, as a practical matter, coordination requires common ownership of the transport agencies involved.

As to the branch line situation, the report's general finding is that each branch presents a problem in itself, freight traffic being usually the most influential factor in deciding whether a branch line will be continued or whether permission will be sought to abandon. The chapter on mail notes that this traffic is productive of substantial revenue and discounts some of the "extravagant claims" as to the air lines' ability to take over the whole job.

The report's final chapter considers the "effect of the war on the attitude of the traveling public toward rail travel." Here are reviewed the A. A. R. opinion surveys which "bring us nearly down to date on what the public thinks about our service, the strong points and those that will require the application of preventive and corrective measures." With the public's preferences for the future also indicated in the surveys, the division found its analysis of them "a logical place to conclude our labors." The latest of these surveys was made last spring and the results were reported in the *Railway Age* of August 24, page 342.

Training Employees in Friendly Service

(*Continued from page 825*)

suance of entertaining literature on this subject, is continuing it. The Alton and Northern Pacific carry on this kind of instruction as a part of the duties of supervisory officers and are heartened at the favorable results being achieved. The Lehigh Valley is one among the many roads which has made a special effort to improve the quality of the personal service rendered by its dining car staffs.

The Norfolk & Western and the

Texas & Pacific are among the roads which stress courtesy heavily in articles in their employee magazines. The N. & W. gives this subject a prominent place in the programs of its Better Service Clubs and the T. & P. supplements its magazine publicity by extensive use of educational posters, which are changed every two weeks. The Florida East Coast reaches employees with this message, not only through intracompany channels but also by advertising in on-line newspapers. Its new book of rules gives additional attention to courtesy and tact.

Pullman's Program

The Pullman Company's plans for upgrading post-war service have been developed through conferences in Chicago with the seven zone superintendents approximately twice a year, followed by conferences held by the zone superintendents at their respective headquarters with the district superintendents, agents, inspectors, and other key personnel. These are coordinated with the series of conferences throughout the entire country with conductors, porters, and attendants.

These conferences are conducted by leaders selected from the ranks of the service inspectors who attend a "briefing conference" in Chicago prior to beginning their conferences and a summarizing conference at the conclusion of the series. These conferences have been received by car service employees with enthusiasm and all employees are given an opportunity to speak and to offer suggestions, comments, and criticisms. As a result of comments offered by the car service employees, Pullman has been able to bring about direct improvement in service and to correct conditions existing on trains and in stations throughout the country. In many cases the comments offered by the employees concern railroad operations. In such cases these comments are referred to the railroads concerned and often result in changes in the makeup of trains, smoother handling, better feeding of passengers, and other improvements. A new series of these conferences will be inaugurated in January, 1947.

In addition to this program, beginning in June of this year, through a special force of service inspectors and porter instructors, conductors and porters employed since January 1, 1942, whose work had been confined for the most part to military movements and who had not had an opportunity to operate in civilian service, were given extensive "refresher" courses. These courses included a general resume of their duties and emphasized personal appearance and friendly, courteous service to passengers.

The company has a corps of 90 to 100 service inspectors who ride trains continuously supervising the service. These men attend refresher conferences in Chicago periodically where present-day conditions and competition are discussed and the complete outline of service requirements and their duties are covered with them.

To augment these activities in behalf of improved service, a program of on-the-job porter training was inaugurated in July of this year when a staff of 36 carefully selected porter instructors in new style uniforms embarked on a train-riding program for the purpose of assisting porters and attendants in the proper performance of their duties on the cars. This program, the company believes, has been one of the most effective things that it has done thus far. Heretofore, the training of car service employees was confined to courses given to them at the time of their employment with the occasional follow-up provided by service inspectors riding trains and porter instructors at the terminals. The actual observation of the porters under road service conditions has enabled the special staff of traveling porter instructors to do an outstanding job in improving the services of older as well as newer porters.

Passenger Train Cars on Order Total 2,598

(Continued from page 803)

The two-car dining-lounge section will actually be one room without a partition, giving an unbroken space 131-ft. long. The third unit will be the kitchen-dormitory. For the "Overland Limited" between San Francisco and Chicago via the Overland Route, new dining and lounge cars have been ordered, and when they are received the train will be completely streamlined. New dining and coffee shop-lounge cars have been ordered for the "Golden State Limited," in the Los Angeles-Chicago service via the Golden State Route, and when the equipment is delivered this train also will be completely streamlined.

The cars ordered by the **Union Pacific** will be fed into regular service. Because of changing schedules, the road cannot designate exactly in which trains the new equipment will operate.

Eight of the cars on order for the **Wabash** (four steel-underframed, 4 bedroom-16 roomette, 85-ft., aluminum-superstructured sleeping cars and four 85 ft. steel-underframed coaches with high tensile steel bodies) are intended for use in the "City of St. Louis" operating between St. Louis, Kansas City, Los Angeles, San Francisco and Portland in conjunction with the Union Pacific and the Southern Pacific.

The **Western Pacific's** portion of the six "California Zephyr" trains to be put into operation jointly with the Burlington and the **Denver & Rio Grande Western** comprises two complete 10-car trains plus one chair car and one standard sleeping car. Two trains will be purchased by the Burlington, one by the Rio Grande and the sixth will include cars contributed by each of the three roads. Each of the trains will consist of one baggage car, three chair cars with vista domes, one tourist car, one **coffee-shop-lounge-dormitory** car with a vista dome, one dining car, two sleeping cars of the 10 roomette-6 bedroom type and one observation-sleeping car of the 3 bedroom-1 drawing room type with a vista dome. All the cars will be of stainless steel construction. Each line will provide its own motive power and for that purpose the Western Pacific has ordered and expects to receive early next year three 3-unit 4,500-hp. Diesel-electric locomotives from Electro-Motive. The schedule of the train will probably call for a very late morning departure from San Francisco and arrival in Chicago early the next afternoon. Westbound, the schedule will probably call for mid-afternoon departure from Chicago and mid-afternoon arrival in San Francisco. These schedules would permit a view of the Feather River Canyon in both directions and the trip on the Denver & Rio Grande Western between Denver, Colo., and Salt Lake City, Utah, would be made largely in daylight in both directions.

The 50 new passenger-train cars on order for the **Canadian Pacific** include 35 68-passenger air-conditioned coaches and 5 sleeping cars of the 10-roomette-5 double bedroom type ordered from the National Steel Car Company and the road's Angus shops, and 10 baggage-express cars ordered from the Canadian Car & Foundry Co. These cars, all of which will be delivered in 1947 are part of a $4,000,000 passenger equipment appropriation. The Canadian Pacific recently completed its 1945-46 program of air-conditioning and remodeling 37 of its older steel cars and has ordered similar treatment for an additional 18 cars next year. The new equipment will be distributed among the road's crack trains, including the transcontinental "Dominion." It is not planned to make up any trains completely of new equipment.

The **Canadian National** has on order 30 60-passenger air-conditioned, first class coaches to be built by Canadian Car & Foundry Co. and 10 mail and express cars and 10 baggage cars to be constructed by the National Steel Car Company. The new equipment will be operated on various main line trains. In addition, the road is converting one of

its present compartment-observation-library-buffet cars into a bedroom-buffet-lounge car, eight of its present hospital cars into parlor cars and six colonist cars into parlor-buffet cars. If the design of the bedroom-buffet-lounge car is found to be satisfactory, the 18 remaining compartment - observation - library buffet cars will be similarly converted at a future date.

The road has requested bids for 16 sleeping cars of the 10 roomette-6 section type and 4 sleeping cars of the 20 roomette type. The first group of 16 sleeping cars will be operated on the "Continental Limited" between Montreal-Toronto and Vancouver, B. C. The 20-roomette sleeping cars will be operated between Montreal and Halifax, on the "Ocean Limited," the "Scotian" and the "Maritime Express."

There were 44,841 passenger-train cars in service in this country at the beginning of 1946, of which 17,691 were coaches, 2,741 coach combinations, 1,552 dining cars, 651 parlor, club-lounge, observation and sleeping combinations, 6,544 sleepers, 1,701 postal, 13,676 baggage, express, and other non-passenger cars and 285 other type cars. This was 22,909 fewer cars than were operated in 1926, the peak of the last 36 years.

The Class I railroads owned 39,460 of the total number of cars in service. Of these, 15,058 or 38.17 per cent were over 30 years old, 3,502 or 8.87 per cent were 26 to 30 years old, 7,110 or 18.02 per cent were 21 to 25 years old, 9,006 or 22.82 per cent were 16 to 20 years old, 1,242 or 3.15 per cent were 11 to 15 years old, 2,040 or 5.17 per cent were 6 to 10 years old and 1,502 or 3.80 per cent were one to five years old. (See graph, for comparison of the ages of cars owned by the Class I roads and those owned by the Pullman Company.)

COMMUNICATION . . .

Urges Employees To Seek Crosser Act Repeal

ST. PAUL

TO THE EDITOR:

For the past fifteen years it has been the tragedy of the common man that for his own protection he had to submit to leadership that often is either corrupt, dictatorial or incompetent. Under the benevolent administration of Franklin D. Roosevelt, these unfortunate conditions became more pronounced, resulting in a split in the labor world with one camp advocating utopian measures to be achieved by means of threats and the other resting under high-salaried, impotent leaders whose one concern is how to usurp more power at the least cost.

Under the provisions of the Transportation Act, the railroad labor forces managed to keep themselves aloof from the rest of the workers, who were driven from pillar to post by the ruthless conduct of selfish leaders who used the war emergency and reasonable demands as fit objects of creating industrial turmoil.

Railroad workers with indefensible indifference left important questions to their high-priced labor executives, who in the past rendered satisfactory services. One result was a railroad retirement plan, which while far from being perfect, compared favorably with some of the best. Towards the close of the last session in Congress, the so-called Crosser Act, a legal enigma, was hastily enacted. It will increase the rates now in effect by 2¼ per cent each for employer and employee, as well. For this rather stiff increase the new act robs the old-timer of his 4 per cent accumulated earnings but increases the minimum allowance from $40 to $50 which simply benefits drifters who did not select railroading as a profession.

Let us be frank and admit that the principal objects of a pension act are the benefits offered to the proposed recipient. There are but three considerations, viz.:

First, let the worker enjoy his pension as soon as accumulated earnings will permit it.

Second, let him draw the most liberal allowance commensurate with the solvency of the fund.

Finally, should the worker fail to reach the stipulated date, let his family or estate enjoy a lump sum similar to an additional insurance policy.

To incorporate in a pension act, as the Crosser Act attempts to do, sickness and maternity benefits plus a lowered retirement age limit for women, is as absurd as it is a betrayal of the original concept that should govern pensions. Let us remember that a number of unrelated risks that have no bearing upon the concept of a pension can easily wreck the entire system by allowing potential chiselers to deplete the funds reserved for those who earn a pension. Just why women, with a far greater life-span than men, should retire five years prior to male workers is a mystery which the "experts" may be able to explain. To the average citizen it looks like indefensible discrimination that probably would not stand up in a court of justice.

In addition, it is a heavy burden upon the pension fund and, if statistics show that this risk can be safely assumed, a sixty-year limit for both male and female ought to be adopted. The efficiency of older employees is greatly reduced so retirement at the earliest possible date would benefit both the worker and the company. Rather than forcing the roads to resort to drastic reductions in forces, the railroad workers would prefer to carry the lion's share of their own protection similar to the system that prevails in the Post Office Department.

While we realize that the average railroad man is the very example of a good citizen who pays his union dues with the ardent hope that his personal interests are thereby being fully protected, we reluctantly concede that this is not the case with the Crosser Act. It is the duty of every railroad worker to acquaint himself with the act and ask how he expects to benefit thereby and particularly how he expects the fund to remain solvent after absurd and unnecessary obligations are to be assumed. If, upon study, the worker agrees with the conclusions herein discussed, let him exercise a citizen's privilege and direct a protest to his Congressman or Senator. Remember higher allowance, reduced retirement age, and a lump-sum settlement in case of death signifies a sound pension act. If the Crosser Act cannot be amended to provide that, it would be better to repeal it. We are paying for protection—not social experiment. Let the rail labor world speak its mind and, if this writer's assistance is needed, he will gladly serve.

WOLFRAM HILL
1812 Munster Avenue, St. Paul 2, Minn.

* * *

Texas and Oklahoma students en route to Stephens College, Columbia, Missouri, in the lounge car of the Katy's 9-car "Stephens College Special" which carried the girls to school this fall

GENERAL NEWS

Water Carriers Reach Low Mark in Traffic

Commerce Department report recommends rate advance to offset high costs

The domestic shipping industry engaged in coastwise and intercoastal trade is carrying "only a fraction of the traffic" handled in pre-war days and unless "very substantial savings" in operating costs are affected, "it appears that rate adjustments may be necessary to permit a full resumption of coastwise and intercoastal shipping services by private ownership." These findings, made by the Transportation Division of the Commerce Department's office of Domestic Commerce, highlight an article in the November issue of "Domestic Commerce," monthly publication of the Department of Commerce.

According to the article, only about one-fourth as many ships are in operation today as common carriers in coastwise and intercoastal trade as before World War II and they are carrying "little more than one-tenth of the cargo formerly transported."

Pointing out that coastwise and intercoastal vessels were called upon to "bear the brunt" of overseas cargo-carrying during the early days of the war and "continued in this service throughout the conflict," the article states that the effect of that program was to divert the shipping public away from domestic water transportation "to the rails and other forms of land transport." It adds that the shipping industry is now carrying a "comparatively small amount" of the traffic it handled in pre-war days, while other forms of domestic transport are "operating virtually at capacity."

Foreign Shipping Flourishes—Noting that 70 per cent of the United States merchant marine—"an important part of the country's transportation service"—was engaged in coastal services before the war, the article observes that resumption of coastwise and intercoastal services by private operation "poses a multitude of problems," with "skyrocketing operating costs without substantial increase in freight rates" as one of the most important. At the same time, it comments that the financial position of the domestic shipping industry is "substantially stronger" than in pre-war years and that surplus new vessels owned by the government can be acquired at "relatively low prices" under the Merchant Marine Ship Sales Act.

"With capital and usable ships available," the article continues, "why is domestic shipping a sick industry while its counterpart, foreign shipping, is flourishing vigorously? The answer to this question is found partly in the fact that the industry was virtually destroyed during the war by the diversion of ships to overseas operation and the consequent shifts of wartime traffic to competing forms of transport.

"Of far greater importance is the extremely gloomy outlook for future profits. Capital will not be used to purchase new vessels even at bargain prices unless there is some prospect of profitable operation. Ship operating costs in labor, food, repairs and especially cargo handling, have risen sharply during the last several years while freight rates have been held at virtually pre-war levels. In foreign fields, on the other hand, rates have increased substantially."

J. J. Pelley Dies

John J. Pelley, president of the Association of American Railroads since its inception in 1934, died in Washington, D. C., on November 12. He was 68 years old. Mr. Pelley had entered the hospital a couple of weeks previously for a check-up and underwent a minor operation a few days prior to his death. He entered railroad service in 1899 and was chief executive of two railroads—first, the Central of Georgia and, then, the New Haven—before he went to Washington to head the A. A. R.

Barriger "Shows Off" Monon

From November 7 to 10, the Chicago, Indianapolis & Louisville, with John W. Barriger, president, as top host, was "at home" to its friends in the financial world, who, via a special train, were given an opportunity to see the Monon as it is today and to visualize the improvements in physical property and service underway and contemplated by the new management.

The special train left Chicago at 9:45 a.m. on the seventh and included in its stops division and terminal points, as well as the more important industrial centers on the line, such as Lafayette, Ind., Michigan City, Bloomington and Indianapolis, and Louisville, Ky. At Indianapolis the party, including more than fifty representatives of banking, investment and insurance houses, participated in the formal opening of the permanent Indianapolis Industrial Exposition housed in the Indianapolis Union station, and at Louisville, as guests of C. W. Ashby, president and general manager of the Kentucky & Indiana Terminal, was taken in a special train over the terminal property.

New Scheme Removes Ban on Car Spotting

Plant qualifies for service by assigning tracks and switching period to roads

Making its third report on further hearing in that phase of the Ex Parte 104 terminal-services investigation which involves switching services at the North Baton Rouge, La., plant of the Standard Oil Company of New Jersey, Division 3 of the Interstate Commerce Commission has found that a new scheme of switching agreed to by the industry and the railroads qualifies most of the plant to receive car-spotting services without additional charges over the line-haul rates. Railroads serving the plant are the Illinois Central and the Louisiana & Arkansas.

In the original report, the commission found that those carriers had complied with their obligations under the line-haul rates by delivery and receipt of carload freight on designated interchange tracks, and that service beyond such tracks was a plant service for which the railroads could not lawfully make an allowance to the industry. This finding was affirmed in the first and second reports on further hearing, whereupon Standard and the railroads agreed on the new scheme, approved in the present report as one which permits spotting under the line-haul rates.

Plant Trackage Divided—"That agreement," the report explains, "provides in effect that the plant will be divided into two separate and distinct parts for switching purposes, one of which will be served exclusively by the Illinois Central and the other one by the Louisiana & Arkansas. The industry says it is willing to make any and all practicable changes in the plant tracks that we or respondents may deem necessary to assure safe and uninterrupted switching by respondents. The industry's engines are to be removed from the plant and no engines other than those of the two respondents are to be permitted in the plant, and the engines of those respondents are to be permitted to operate only over the tracks specifically assigned to them.

"Ten districts on the western side of the plant are to be served exclusively by the Illinois Central and 13 districts are to be served from the east side of the plant exclusively by the Louisiana & Arkansas. One district is to be served by both carriers, but it will in effect be divided into two separate districts, each part to be served exclusively by only one respondent."

The "free" spotting services will not be available to one of the plant's districts, the

commission finding there that the L. & A.'s obligation under the line-haul rates extends only to designated yard tracks. Also, car-weighing services performed at the industry's request will be subject to the usual tariff charges; any interchange of Standard Oil traffic between the two roads will be accomplished in the same way as that on all other traffic moving to and from all other industries in the North Baton Rouge switching district; and the same switching tariffs that apply to and from other industries will apply on shipments to and from the several districts of the plant, absorptions of switching charges being made only when provided for in the tariffs.

The arrangement further provides that bills of lading for outbound cars are to be given to the railroads before 3 p.m. each day, and that switching within the plant may be performed at any time the carriers desire after 3 p.m. and before 7 a. m. the next morning. While it recognizes that this specified switching period will be most convenient for the industry, the commission finds that it is also advantageous to the railroads. "Under the circumstances," the report adds, "the switching would be performed at respondents' ordinary operating convenience and . . . in a continuous movement within the meaning of Rule 2 of W. S. Curlett's Tariff I. C. C. A-833 which provides rules for the receipt and delivery of carload freight on, to, and from private tracks and industrial tracks." I. C. is a party to the Curlett tariff, the report notes, adding that the L. & A. "states it will become a party to similar rules if the proposed plan is approved."

Not a Precedent—The commission's specific finding is that the two roads may and have a duty to spot cars without charge in addition to the line-haul rates at all points within the respective plant districts served by them, provided that each district (except specified points where an additional movement would be authorized) be switched only once a day. In the latter connection, the commission emphasizes that it is dealing only with the case in hand and not laying down a rule.

"Much," it explains, "has been said herein relative to one switch a day . . . . This is because we are here dealing with proposed rather than actual operations and the plan of switching which we are asked to approve, before it is inaugurated, is predicated and submitted on the representation that not more than one switch a day will be required or made, except at District 10, the switching of which is not made subject to such a restriction in this report.

"As pointed out herein, evidence of the daily movement of cars to and from each district indicates that, unless there is some readjustment of shipments or enlargement of track capacities, the switching at some of the districts cannot be done in the manner depicted by the parties. Unless we accept the representations as made and condition our approval thereon, we would be lendng our sanction to switching practices relative to which we have no definite information and which might or might not be lawful. It is not intended here to lay down any rule that not more than one switch a day may be made by a carrier at the line-haul rates. Whether a carrier is justified in doing so must be determined by the facts and circumstances attending and surrounding each particular plant."

P. H. Joyce, Retired C. G. W. President, Dies

Patrick H. Joyce, who retired on May 21 as president of the Chicago Great Western, died at Mercy hospital, Chicago, on November 10, after a long illness. Mr. Joyce came to the C. G. W. in 1929 as a director, and two years later he was elected president of the company. At the time of his retirement he was also chairman of the executive committee, which position he held until his death. A photograph of Mr. Joyce and a review of his career were published in the *Railway Age* of June 1.

Express Agency Would Raise Rates on Short Notice

The Railway Express Agency has asked the Interstate Commerce Commission for authority to make effective on one day's notice the rate increases authorized by the commission in its Ex Parte 103 report of October 28. As noted in the *Railway Age* of November 2, page 738, that report called for the usual 30 days' notice in tariffs publishing the new express rates calculated to produce about $58,900,000 in additional annual revenue.

R. E. A.'s short-notice application noted that the authorized advance had received widespread publicity, and pointed out that each day's delay is costing it about $200,000. Meanwhile, it has filed tariffs publishing the increases with a December 13 effective date.

Industrial Exposition Opens in Indianapolis Station

The Permanent Indianapolis (Ind.) Industrial Exposition announced in the *Railway Age* of October 19, page 656, was formally opened on November 7, by appropriate ceremonies held on the afternoon of that day in the Union station, which houses the exposition, and by a dedicatory dinner that evening at the Claypool hotel.

Railway men in attendance included Wayne A. Johnston, president of the Illinois Central; Roy B. Waite, president of the Baltimore & Ohio; Gustav Metzman, president of the New York Central; J. W. Davin, president of the New York, Chicago & St. Louis; John W. Barriger, president of the Chicago, Indianapolis & Louisville; James M. Symes, deputy vice-president in charge of operation of the Pennsylvania; Paul E. Feucht, president of the Indianapolis Union, and vice-president, Western region of the Pennsylvania; and William H. McKitrick, superintendent of the Indianapolis Union. Other guests included Ralph F. Gates, governor of Indiana; Robert H. Tyndall, mayor of Indianapolis; Clyde E. Whitehill, president of the Indianapolis Chamber of Commerce, and Edwin S. Pearce, president of the Railway Service & Supply Co., Indianapolis, and chairman of the governing committee, Indianapolis Industrial Commission.

Speaking at the dinner, Mr. Pearce said: "It is generally recognized that industry and transportation are essential to the prosperity of a community. Their nature and extent, however, are too often not properly evaluated. An informed public makes for a progressive community. A progressive community recognizes the importance of mutual responsibility through common ideas and ideals, common understanding, common appreciation of traditions, and common satisfaction in accomplishment. It is in recognition of these basic essentials that the Permanent Industrial Exposition was created. To the extent it is used these essentials will be promoted.

"The exposition is magnificently housed in a location exposed to the view of a constant stream of people, some 10,000 persons a day—a staggering total of more than 3,500,000 each year. This site is made possible by the generosity and cooperation of the railroads serving this community—railroads whose importance to the economic life of this area cannot be overestimated.

"The exposition will be seen not only by our own Indianapolis people but by the traveling public. The location in the concourse of the Union station not only makes the exposition possible but provides a constant flow of interested spectators. For this great service by the railroads we are deeply grateful. Their cooperation is an excellent example of their high purpose and community interest."

Chicago-Florida Service to Be Improved This Winter

Improved train service between Chicago and other mid-western cities and Florida has been announced for this year's winter seasonal travel, beginning December 12, by the ten railways participating in the traffic. From Chicago, one-night-out, reserved-seat-coach and Pullman trains will depart daily at 9 a.m. for Miami, Fla., via three routes. These trains will arrive at Jacksonvilile, Fla., the next day at 11:45 a.m., and will arrive at Miami at 7:55 p.m. Northward they will leave Miami at 9:40 a.m., Jacksonville at 5:50 p.m., and will arrive in Chicago at 6:35 p.m. Service will be offered every third day over each of the three routes, but the schedules at the terminals will be the same for each train.

One train, the "Florida Arrow" will operate from Chicago via the Pennsylvania to Louisville, Ky., the Louisville & Nashville to Montgomery, Ala., the Atlantic Coast Line to Jacksonville, and the Florida East Coast to Miami. Another, the "Dixieland," will leave Chicago over the Chicago & Eastern Illinois, running from Evansville, Ind., to Nashville, Tenn., via the L. & M., thence via the Nashville, Chattanooga & St. Louis to Atlanta, and the A. C. L. and F. E. C. beyond. The third, the "Sunchaser," will operate over the Illinois Central to Birmingham, Ala., the Central of Georgia to Albany, Ga., and the A. C. L. and F. E. C. to Miami.

The New York Central's winter service from the Mid-west to Miami will be operated in conjunction with the Southern and the Seaboard, commencing December 6. Its train, the "Florida Sunbeam" will handle

through sleeping cars from Chicago, Detroit, Mich., and Cleveland, Ohio, and through coaches from Detroit and Cleveland, to Miami. It will leave Chicago daily at 11:45 p.m., Detroit at 11:40 p.m., and Cleveland at 12:50 a.m. These three sections will be consolidated at Cincinnati, Ohio, leaving that point at 8:15 a.m., and arriving in Miami at 11:59 a.m. the second morning from the points of origin. Northward the train will leave Miami at 6:30 p.m., arrive Cincinnati at 10:30 p.m. the next day, and at Cleveland at 6:55 a.m., Detroit at 7 a.m., and Chicago at 7:35 a.m. the following morning. The route will be N. Y. C. to Cincinnati, Southern to Hampton, Fla., and Seaboard to Miami.

Freight Car Loadings

Reports of carloadings for the week ended November 9 were not available when this issue went to press.

Loading of revenue freight for the week ended November 2 totaled 922,312 cars, and the summary for that week as compiled by the Car Service Division, A. A. R., follows:

Revenue Freight Car Loading

For the Week Ended Saturday, November 2

District	1946	1945	1944
Eastern	176,693	157,336	164,416
Allegheny	191,998	174,873	189,295
Pocahontas	62,001	59,426	55,425
Southern	139,821	130,123	128,516
Northwestern	135,888	124,945	131,486
Central Western	149,405	139,217	145,061
Southwestern	66,506	65,382	78,870
Total Western Districts	351,799	330,144	355,417
Total All Roads	922,312	851,962	893,069
Commodities:			
Grain and grain products	52,105	59,070	54,606
Livestock	23,354	27,830	23,287
Coal	182,233	180,686	170,625
Coke	13,819	11,688	14,337
Forest Products	46,834	36,069	43,952
Ore	58,457	51,562	63,249
Merchandise l.c.l.	131,123	116,255	109,842
Miscellaneous	412,335	368,802	411,971
November 2	922,312	851,962	893,069
October 26	942,257	854,779	916,485
October 19	531,766	773,807	906,005
October 12	839,443	754,339	898,720
October 5	906,848	768,040	877,035
Cumulative Total, 44 weeks	35,021,223	36,017,246	37,237,379

In Canada.—Figures for car loadings for the week ended November 2 were not available as this issue went to press.

Truman Ends Control of Wages and Virtually All Prices

President Truman issued a November 9 executive order eliminating all wage and salary controls and all price controls except those on rents, sugar, and rice. Controls over railroad wage adjustments have been exercised by emergency and arbitration boards appointed under the Railway Labor Act and by Chairman H. H. Schwartz of the National Railway Labor Panel.

Decisions of emergency and arbitration boards, which certified that their findings were consistent with the stabilization program, have been final in railway wage proceedings, since enactment in 1944 of the Emergency Price Control Act amendment which relieved the economic stabilization director of the authority he formerly had with respect to them. This legislation, sponsored by Mr. Truman, who was then a member of the Senate, grew out of the refusal of former Economic Stabilization Director Fred M. Vinson (now chief justice of the Supreme Court) to approve an eight-cents-per-hour wage increase which had been recommended by emergency boards and agreed to by the railroads and union representatives. Meanwhile, Mr. Schwartz has had authority to clear railway wage or salary adjustments which did not result from emergency or arbitration board proceedings.

Shifts in Congress' Interstate Commerce Committees

Last week's elections wherein the Democratic party lost control of both branches of Congress will result in Republicans winning chairmanships of the next Congress' standing committees, including the Senate and House committees on interstate commerce. However, the outlook in that connection is somewhat confused by the congressional reorganization act which was enacted this year with provisions reducing the number of standing committees of the Senate from 33 to 16 and those of the House from 48 to 19 and otherwise "streamlining" congressional procedures.

There have been in Washington some recent reports to the effect that the new Congress might nullify the committee-reduction provisions of the act by the simple expedient of passing a resolution to adopt the organization and rules of its predecessor. Provisions of the reorganization act, which was signed by President Truman on August 2, were noted in the *Railway Age* of August 10, page 240.

In any event, the most important effect of the elections on the committees on interstate commerce will be the displacement of Representative Clarence F. Lea of California as chairman of the House committee. In 28 of the 32 years that he will have been a member of the House after completing his next term, which he has announced will be his last, Mr. Lea has been the nomineee of both major parties; but he is listed in the Congressional Directory as a Democrat and he has been part of the Democratic organization in the House. The ranking Republican member of the committee, to whom the chairmanship would logically go, is Representative Charles A. Wolverton of New Jersey.

On the Senate side, the present chairman of the committee on interstate commerce—Senator Burton K. Wheeler—was eliminated before the election by his defeat for renomination in Montana's Democratic primary. The ranking Republican member of this committee has been Senator Wallace H. White, Jr., of Maine, who will presumably continue as a member of the Republican's Senate leadership group with duties that might preclude his acceptance of the committee chairmanship.

Next in seniority among the committee's Republican members would be Senator Charles W. Tobey of New Hampshire, who might prefer the chairmanship of the committee on banking and currency of which he is ranking Republican member. Senator Clyde M. Reed of Kansas ranks next to Mr. Tobey in the Republican group on the present committee on interstate commerce.

Among complications which will arise in the Senate as a result of the reorganization act will be those resulting from the fact that the proposed new committee on interstate and foreign commerce will have jurisdiction over matters heretofore handled by the committee on commerce. The ranking Republican member of the latter is Senator Arthur H. Vandenberg of Michigan, who is expected to continue as a member of the Republican leadership group and perhaps become chairman of the committee on foreign relations. Next in seniority among Republican members of the present committee on commerce would be Senator Owen Brewster of Maine, and after him comes Senator Alexander Wiley of Wisconsin.

In addition to Chairman Wheeler, the following members of the present committee on interstate commerce will not return to the Senate, either because of primary or election defeats or because they were not candidates: Senators Tunnell of Delaware, Mitchell of Washington, Briggs of Missouri, and Huffman of Ohio, Democrats, and Austin of Vermont, and Shipstead of Minnesota, Republicans. For like reasons the following members of the present House committee on interstate and foreign commerce will not return: Representatives Boren of Oklahoma, Patrick of Alabama, Sullivan of Missouri, Murphy of Pennsylvania, and Kelly of Illinois, Democrats, and Holmes of Massachusetts, Reece of Tennessee, and Winter of Kansas, Republicans.

A. A. R. Member Road Meeting Postponed

The annual meeting of member roads of the Association of American Railroads has been postponed until sometime in December, no definite date having been fixed when this issue went to press. The meeting, to be held at the Biltmore hotel in New York, was originally scheduled for November 20.

Car Service Orders

Office of Defense Transportation regulations governing rail shipments of overseas freight to the ports have been modified by General Order ODT 16C, Revised, which was scheduled to become effective November 15, superseding General Order ODT 16C. The superseding order prohibits the transportation by rail of carload shipments of overseas freight to or within the principal port areas for storage within such port areas or for delivery to an ocean carrier, without a special permit.

Exceptions set out in the order cover specified shipments of grains, soybeans, flaxseed, malt, petroleum, petroleum products, livestock, live poultry, and shipments for the armed forces. The latter will be the only government shipments covered by the general exceptions; all government shipments were exempt from the previous order. Other changes include the elimination of the general exception applying to coal and coke.

However, the order was accompanied by General Permit 16C, Revised 1, and General Permit 16C, Revised 2, both also effective November 15. The latter excepts shipments of coal or coke in bulk, while the

former excepts shipments consigned to a public warehouse, or in care of a port terminal carrier, for storage when prior arrangements have been made for such storage.

Interstate Commerce Commission Service Order No. 620, which has prohibited the light-weighing of box cars intended for loading of imported wool as Boston, Mass., has been broadened to apply a like prohibition with respect to cars intended for loading of Egyptian cotton. The modification came in Amendment No. 1, effective November 10.

I. C. C. Bureau Issues Study of Regional Shifts in Traffic

The Interstate Commerce Commission has made public the study of "Regional Shifts in the Post-War Traffic of Class I Railways," which was prepared in its Bureau of Transport Economics and Statistics and previewed in the October issue of the bureau's "Monthly Comment." That preview, reported in the *Railway Age* of October 19, page 658, showed a summary table which pointed up the study's general finding that Official Classification Territory will fail to maintain its 1939 relative position as an originator of carload traffic during the three post-war years, 1946-48.

The complete study, Statement No. 4622, is a document of 410 mimeographed pages, and it carries the usual disclaimer to the effect that it has been issued "as information" and "has not been considered or adopted" by the commission. Dr. W. H. S. Stevens explained in the preface that the study is another one in the bureau's series relating to transportation in the post-war period. Previous ones have included "Post-War Earnings of Class I Railroads" and "Post-War Traffic Levels" (see *Railway Age*, issues of October 28, 1944, page 665, December 23, 1944, page 970, and July 27, 1946, page 146). The study was prepared by Julian Duncan and H. S. Cannell, members of the bureau's staff working under the direction of Spurgeon Bell, head transport economist.

Percentage Distribution—Tons Originated
1939 Actual, and Estimate B for Years 1946, 1947, and 1948

Year	United States	Territories: Official	Southern	Western Trunk-Line	Southwestern	Mountain-Pacific
		Products of Forests				
1939	100.0	14.7	30.8	7.5	11.6	35.4
1946	100.0	15.2	30.8	6.8	12.0	35.2
1947	100.0	14.6	30.8	6.5	12.5	35.6
1948	100.0	14.3	30.8	6.3	12.6	36.0
		Animals and Products				
1939	100.0	31.1	3.4	45.9	8.1	11.5
1946	100.0	30.8	3.8	45.1	8.9	11.4
1947	100.0	30.9	3.9	45.4	8.6	11.2
1948	100.0	31.0	3.5	45.4	8.7	11.4
		Products of Agriculture				
1939	100.0	27.9	7.5	37.4	10.0	17.2
1946	100.0	22.7	7.4	43.4	10.9	15.6
1947	100.0	22.6	7.5	43.3	11.0	15.6
1948	100.0	22.8	7.5	43.2	11.0	15.5

As the preview pointed out the study presents two possible patterns of the territorial distribution of tons of freight originated for the years 1946, 1947 and 1948. One of these patterns is based on a projection of the actual originations by territories for the years 1937-44. The other is the same projection modified by adjustments for the estimated maximum effect on tons originated resulting from the utilization of production facilities constructed during the war.

The final estimates of originations by territories are constructed on three bases, each involving a different assumption as to the level of national income. Estimate A is based on the assumption of "full employment"; Estimate B assumed a national income "somewhat below full employment"; and Estimate C is based on "a rather low level of employment."

The preview's summary table, reproduced in the issue of October 19, showed the forecasts of Estimate B, the "intermediate national income level which would be associated with about three million unemployed." It gave the estimated relatives for "All Carload Traffic" and for the "Products of Mines" and the "Manufactures and Miscellaneous" groups. The estimates on the basis of the "trend percentages" for the other three commodity groups are shown in the accompanying table. For these three groups, the study deals only in "trend percentages," i.e., the projections based on 1937-44 with no adjustments to reflect the estimated utilization of war-built facilities.

"In the case of manufactures and miscellaneous," the study's summary comment said, "it will be observed that in the trend distribution, as well as the distribution based on maximum probable westward shift, Official territory shows a declining trend in the percentage of total tons originated in the early post-war years. . . . . It appears that Official territory loses much more to the other freight rate territories in the maximum probable westward shift than in the regular trend distribution. The territories that gain most in the maximum probable westward shift distribution are Southwestern and Mountain-Pacific. Southern territory also loses sharply to Southwestern and Mountain-Pacific if one relies mainly on the distribution of war facilities to indicate territorial percentages of tons originated in the post-war years. The regular trend distribution shown for Southern territory gives it a better status than it had in the pre-war period, whereas it is suggested from the war facilities distribution that it might have a less favorable position. There are available certain data in regard to the 1946 tons originated in Southern territory which suggest that the regular trend distribution is closer to the probable development than that indicated in the maximum probable westward shift."

The same analysis was made for all carload traffic as the presentation for manufacturers and miscellaneous, summarized in the foregoing. "It is apparent," the summary comment continued, "that for all carload traffic Official territory loses less to the other freight-rate territories in the maximum probable westward shift than it did for manufactures and miscellaneous. The chief gain for all carload traffic, growing out of the war facilities shift, is shown to be in Southwestern territory. Southern territory barely holds its own in comparison with pre-war, whereas Western Trunk-Line territory is shown to gain substantially. Mountain-Pacific gains only slightly since it loses in other types of traffic almost as much as it gains in manufactures and miscellaneous.

"There has been in recent years a growing percentage of total agricultural traffic originating in Western Trunk-Line territory, and this accounts to some extent for the favorable showing made by this area in the distribution of all carload traffic. On the other hand, Mountain-Pacific shows a declining percentage of total traffic between 1937 and 1945, and this accounts for the fact that Mountain-Pacific has a less favorable showing in the distribution of all carload traffic than in the distribution of manufactures and miscellaneous in the post-war years. Western Trunk-Line has not only gained as compared with the other territories in its percentage of agricultural products but has also gained since 1937 in the percentage of products of mines, and this circumstance has contributed to its favorable position in the distribution of all carload traffic in the early post-war years."

A. A. R. Booklet Traces Railroad Public Relations Program

The course of the railroad industry's public relations program during the past 10 years is traced in a booklet prepared by the Public Relations Office of the Association of American Railroads and sent to the railroads this week by A. A. R. President J. J. Pelley. The booklet, as it says, undertakes to tell "what has been done, what is being done, what can be done—and some ways of doing it."

The change in feeling toward the railroads which has come about during the past 10 years is found to have been summed up in a quotation from a recent issue of the International Falls (Minn.) Journal. The quotation said, "It hardly seems possible that a few short years ago people debated in all seriousness the point of whether the railroads were an obsolete form of transportation . . . The carriers have proved that they are not decadent, that they possess a vitality which will enable them to do an even better job for the America of the future."

The booklet as a whole is an attractively illustrated presentation of how changing public relations problems have been and are being met. Before the war broke out in Europe in 1939, the emphasis was on the story of railroad progress and achieve-

ment; problems of capital investment and the need for railroad credit and adequate earnings. Also in this period, A. A. R. advertisements, pamphlets and posters dealt with "the fundamentally important question of unequal competition."

With the coming of the country's defense program in 1939, the job became one of letting the public know that the privately-operated railroads could—and would—meet all demands made upon them. This was the "railroads are ready" phase which was followed with the coming of the war by a new shift of emphasis onto the need for public understanding of railroad problems and calls for conservation—such as the heavy-loading and "don't travel" campaigns. And now it is found possible to discuss again such subjects as the investment necessary to create transportation facilities, the need for continuing such investment in the future, and "the fact that we cannot keep on having self-supporting, tax-paying, business-operated railroads without adequate rates and revenues."

Throughout the booklet are shown results of public opinion surveys which indicate the change in thinking about the railroads. In the summer of 1941, for example, 45 per cent of those interviewed in a survey thought that if the United States got into the war, it would be a good thing for the government to take over railroad operation. In 1946, however, only 13 per cent of those queried said they thought government operation would be a good thing. The number who thought the railroads were doing a good job in defense and war went up, between 1941 and the end of the war, from 40 to 80 per cent; and the number who thought the job was poor went down "from 10 per cent almost to the vanishing point."

In reporting the foregoing, the A. A. R. recognizes that the railroads' wartime performance was "remarkable," but it points out that those whose knowledge of it was limited to their own personal experiences "would not have known it—if they had not been told." Then it adds that the future of railroad public relations cannot be trusted to the memory of the public, which "is short," and "besides there are another 2,500,000 young people growing up each year, to whom the story has to be told." It is noted that in 1944 railroad expenditures for advertising, including timetables, totaled 15 cents per $100 of gross revenues, while the truck lines were spending 26 cents, the bus lines, 75 cents, and the airlines, $3.25.

Among other suggestions for the future, it is indicated that definite steps should be taken to interest and inform railroad men "not just about doing their daily jobs, but about the railroad business." This suggestion came after a reference to the recent *Railway Age* survey which showed that railroad men "are little, if any better informed than is the public in general about the problems of their industry." Of the proper approach to public relations work, the report has this to say:

"Two things make, or mar, the relations of the industry with the public—

"1. What railroads and railroad men do for the public—and the way in which they do it; and

"2. What the public is told about the railroads—and the way in which it is told.

"In this business of public relations there are no short cuts—no wands to wave—no magic words to utter.

"Success is a product of doing the right job—and telling the public about it in the right way.

"So far as telling the public goes, again there are two things to be done—

"To present the facts which will establish in the public mind the sort of general 'character' which the industry deserves—

"And to improve and enlarge public understanding of those problems of the industry which touch upon the public interest."

To Drop Furlough Fares in East and South

Railroads and bus lines operating in the territory east of the Mississippi river, with some exceptions, will discontinue on December 1 the 1¼ cents-per-mile round trip fares which have been available throughout the war period to service men and women traveling in uniform at their own expense. Notice of the proposed discontinuance came in tariffs which have been filed with the Interstate Commerce Commission by publishing agents for the railroads and bus lines.

Parties to the railroad tariffs are all roads operating in the territory east of the Mississippi except the Gulf, Mobile & Ohio, the Illinois Central, the Central of Georgia, and the St. Louis-San Francisco; while the majority of the bus lines operating in the same territory are parties to a tariff filed by the National Bus Traffic Association. Indications that western railroads may have decided to defer similar action came in a tariff filed by one of their publishing agents to postpone the expiration date of his furlough fare tariff from December 31 to June 30, 1947.

Additional general news appears on page 857. A list of current publications appears on page 861.

Materials and Prices

The following is a digest of orders, notices and information of interest to railways issued by the Office of Price Administration and the Civilian Production Administration since October 21:

Babbitt Metal—An increase in the amount of tin permitted in the production of babbitt used in bearings has been authorized by C. P. A. in Amendment 1 to tin order M-43, because lead and antimony shortages are threatening bearing industries.

Construction Machinery—The housing expediter has extended the "freeze" on nine kinds of new and used construction machinery for 30 days, including batching plants, cranes, ditching machines, portable air compressors, rock crushers (25 tons an hour or under), track-laying tractors and tractor-type scrapers.

Decontrol—Alloy steel and tubing, iron ore shipped on or after Jan. 1, other steel and alloy-steel products and lumber products have been decontrolled by O.P.A. in Amendment 63 to Supplementary Order 129, effective Nov. 1.

Freight Rates—Adjustments to compensate jobbers of stock millwork for increases in rail freight costs have been approved by I. C. C. and are contained in Amendment 14 to O. P. A. R 525, effective Oct. 26.

Inventory Control—Inventory restrictions on several scarce materials ranging from soda ash to radiators and some roofing products have been tightened by O.P.A. in amendment to PR 32.

Lumber—Lumber has been placed under the control of a new limitation order and additional provisions have been made to insure a more adequate and equitable supply of lumber, hardwood flooring and millwork not only for the veterans' housing program but also for other essential users including persons not eligible for priorities, the C. P. A. recently announced.

The new order, L-359, will take the place of Direction 1 to PR 33, which direction will be revoked on October 31. L-359 becomes effective on November 1.

Lumber—Softwood and hardwood lumber production this year may reach 33 billion bd. ft., an increase over last year of five billion ft., the Forest Products Division of the C. P. A. said recently.

C. P. A. said that August lumber production hit 3,450,645,000 bd. ft., the highest in 1946. The August total was made up of 2,480,980,000 bd. ft. of softwood and 969,665,000 bd. ft. of hardwood.

September production was estimated at about three billion ft. which would make third quarter production 9,618,000,000 bd. ft.

Scrap—Special controls on receipts of iron and steel scrap by consumers and dealers have been imposed by C. P. A. in an amendment to General Steel Order M-21.

Soda Ash—By agreement with the Soda Ash Industry Advisory Committee the voluntary plan of distribution of soda ash which worked successfully during the war years has been reinstituted, the C. P. A. recently announced, and the needs of all of the soda ash consuming industries, including the aluminum industry, will be taken care of on an equitable basis.

The Soda Ash Industry Advisory Committee estimated that the present production of soda ash is 15 per cent below the requirements of essential users and saw no immediate probability of an increase in production next year which would overtake demand. Members said that under the voluntary distribution plan the industry would make every effort to distribute the supply equitably, and would increase its present rate of deliveries of soda ash to aluminum producers by 45,000 tons a year, or approximately one per cent of total estimated production, C. P. A. officials said.

Steel—Small business concerns will continue to receive priorities aid in obtaining steel under PR 28, C. P. A. recently ruled.

Zinc—All six grades of zinc will be released from government stocks, starting in November, C. P. A. recently ruled.

Prices

Cement—Maximum prices for portland cement have been raised 15 cents a barrel for producers in northern California and northern Nevada and 20 cents a barrel for producers in Oregon and Washington in Amendment 21 to O.P.A. R 224, effective Nov. 1.

Clay Pipe—Ceiling prices for vitrified clay sewer pipe and allied products sold in Washington, Oregon, Idaho and Montana have been increased 6 per cent in Amendment 26 to Revised O. P. A. Regulation 206 and Amendment 68 to Order 1 under Section 25 of Regulation 592, both effective Oct. 15.

Clay Products—To correct an omission in an earlier amendment, O. P. A. has redefined the "eastern area" in which resellers of vitrified clay sewer pipe and allied products are permitted to change their dollar-and-cent pass-through of manufacturers' increases since March 31, 1946, to a straight percentage pass-through, in Amendment 27 to RR 206, effective Oct. 26.

Flexible Cord—The braided flexible cord subcommittee of the wire and cable industry advisory committee recently met with O. P. A. on price increases.

Lumber—An increase of $1 a thousand pieces in the ceiling price of lath, and several changes in the regulation covering western pine and associated species of lumber are contained in Second Revised O.P.A. R 94, effective Nov. 4.

Machine Tools—Sellers of brand name machine tools, who do not manufacture the machine tools

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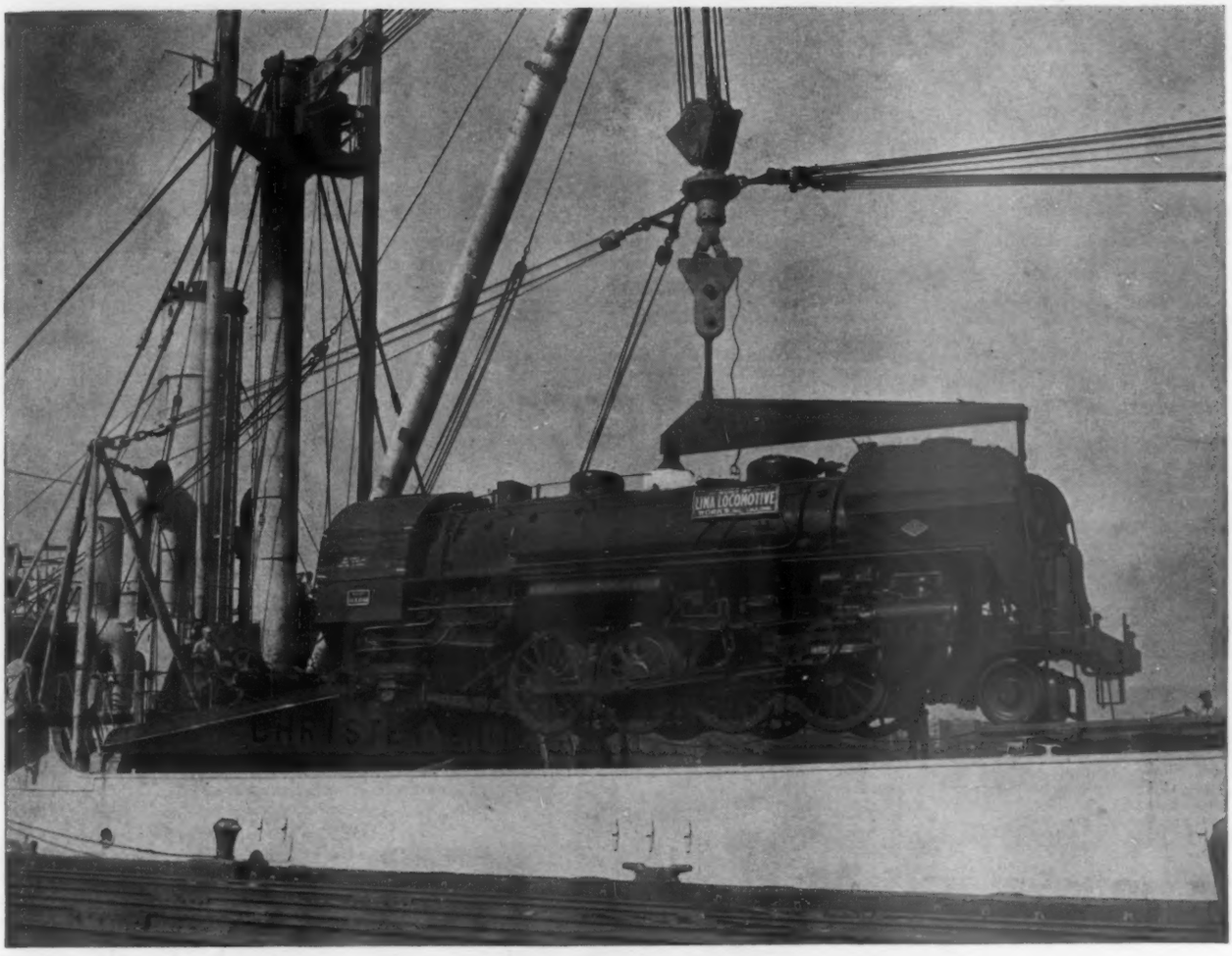

STEAM POWER

to speed the rehabilitation of France

Eighty Lima-built steam locomotives have already been shipped to France to speed the rehabilitation of her war-torn railroads. These are part of an order for one hundred eighty 2-8-2 steam locomotives that have been specially designed to meet the requirements of this country whose transportation system was decimated by the war.

Illustrated above is one of these locomotives being loaded aboard the S.S. Belpamela at Pier 9 of the New York Central Railroad in Weehawken, New Jersey in September of this year.

LIMA LOCOMOTIVE WORKS LIMA LOCOMOTIVE WORKS INCORPORATED **INCORPORATED, LIMA, OHIO**

they sell, have been provided with a new method of fixing their maximum prices in Amendment 5 to O.P.A. R 67 and Amendment 11 to MPR 1, both effective Nov. 2.

Machinery—Automatic adjustable pricing, formerly permitted with the filing of an individual maximum price adjustment application on machinery, equipment and parts has been barred in Amendment 8 to Supplementary O. P. A. Order 142, effective Oct. 22.

Millwork—Manufacturers of special millwork may apply for individual adjustment in their ceiling prices where they can show that existing maximum prices results in hardship under Amendment 2 to O. P. A. R 608, effective Oct. 26.

Pig Iron—To prevent a loss on merchant pig iron shipments into New England under a temporary directive of C. P. A., a producer may apply for special ceiling price adjustments to cover his total costs plus his average freight to the New England points, under Amendment 15 to Revised O. P. A. Schedule 10, effective Oct. 21.

Plywood—Ceiling prices for edge grain western red cedar plywood have been established in Order 1 under third revised O. P. A. Regulation 13, effective Oct. 26.

Roofing Products—Ceiling price increases for asphalt and tarred roofing products sold in the northwestern area, and for rigid siding and backer board sold anywhere in the United States, have been authorized in Amendment 12 to Revised O. P. A. Schedule 45, effective Oct. 30.

Scrap—C.P.A. has placed copper scrap and copper-base alloy scrap under the same inventory controls as now apply to secondary iron and steel in Direction 11 to PR 32.

Zinc—An increase in producers' ceiling prices of 1 cent a pound of zinc contained in zinc anodes and special shapes, primary and secondary zinc-base alloys, zinc dust, wire and battery cans and battery sides and bottoms, has been authorized in Amendment 18 to Supplementary O.P.A. R 14G, effective Oct. 31.

Supply Trade

Waterhouse & Co., 50 Church street, New York, have been appointed sales agents in the railroad field for the **American Tire & Rubber Co.** of Trenton, N. J.

Albert A. Mattson has been appointed supervisor of traffic for the **Koppers Company**, and **James F. Haley**, supervisor of transportation, both with headquarters in Pittsburgh, Pa.

Charles F. Codrington, assistant to the manager, has been appointed sales manager of the blower and compressor department of the **Allis-Chalmers Manufacturing Company**, Milwaukee, Wis., to succeed **A. E. Caudle**, who has resigned.

J. T. Myers, assistant general manager, has been elected vice-president in charge of sales and production of the **Davey Compressor Company**, Kent, Ohio. He has been associated with the company for the past five years.

The **Borg-Warner Corporation** has announced the purchase of the physical assets of the **Superior Sheet Steel Company**, Canton, Ohio, transfer of ownership to be effective December 2. The Superior mill will continue under its present management personnel as a division of Borg-Warner.

The **Terminal Manufacturing & Supply Co.**, Cleveland, Ohio, has been appointed by the **Menasco Manufacturing Company**, Burbank, Calif., as exclusive sales representative for Malabar hydraulic railroad jacks and tools, in Ohio, Indiana, Illinois, western New York, western Pennsylvania and Michigan.

Philip Barnes has been appointed advertising manager of the **Weston Electrical Instrument Corporation**, Newark, N. J., to succeed **Sidney Cassey**, who has retired after 30 years with the company. Mr. Barnes was a member of the advertising department from 1934 until he entered the navy in 1943.

Walter H. Baselt and **David M. Light** have been appointed mechanical assistants to G. H. Snyder, vice-president in charge of railway sales for the **American Steel Foundries.** Mr. Baselt was formerly mechanical assistant to the vice-president in charge of product engineering and Mr. Light served the company as sales engineer.

James C. Younglove, whose retirement as sales manager of the Railroad division, **American Hair & Felt Company**, at Chicago, was reported in the *Railway Age* of November 2, was born on August 7, 1879, at Crescent, N. Y. Mr. Younglove began his career in railroad sales in 1902, with Johns-Manville Sales Corporation, as

James C. Younglove

a local manager of its railroad sales department at Chicago. He later advanced to assistant general manager and to general manager of the railroad department, and while holding the latter position, served for 8 years as a director of the company. In 1930 he joined the American Hair & Felt Company in the position he held at the time of his retirement.

R. G. LeTourneau, Inc., Peoria, Ill., has moved its eastern sales office to 1026 17th street, N. W., Washington 6, D. C. **Jack Williams** has been appointed eastern sales manager at the new office and **Henry Cain**, assistant to the eastern sales manager. **W. B. Worden**, former district sales and service representative in southern California and Arizona, has been appointed central sales manager, to succeed **M. E. Miller**, resigned, and **Harold F. Stenstrom** has been appointed district sales representative, with headquarters in Memphis, Tenn.

OBITUARY

Walter A. Ridings, president of the Porter-Cable Machine Company, Syracuse, N. Y., died on October 17.

Edwin Strassburger, St. Louis, Mo., representative for the Buffalo Brake Beam Company since 1906, died at his home on November 4. He was 77 years old.

J. Truman Evans, manager of the locomotive sales department of the Vulcan Iron Works, Wilkes-Barre, Pa., died on October 19. Mr. Evans was associated with the company for more than 50 years.

Equipment and Supplies

FREIGHT CARS

October Freight Car Deliveries Below Previous Month

Freight cars delivered to domestic railroads during October totaled 3,828, including those from railroad shops, compared with 4,016 in September, which included 772 from railroad shops, the American Railway Car Institute has announced. The shortage of steel and the effects of strikes in many small plants which provide supply items caused the carbuilding industry and railroad shops to fall behind in their production schedules, the Institute said. Freight car deliveries during the first ten months of the year amounted to 35,537, including 8,150 from railroad shops, while the orders placed since January 1 called for a total of 59,552 new cars.

New car orders booked last month were 3,407, compared with 12,737 in September and 9,530 in August. Cars on order and undelivered on November 1 totaled 45,527, according to the institute.

The CHESAPEAKE & OHIO has ordered 10 box cars from its shops at Russell, Ky.

The NORFOLK SOUTHERN has ordered 250 50-ton box cars from the Pullman-Standard Car Manufacturing Company.

The SEABOARD AIR LINE has ordered 150 70-ton covered hopper cars from the Bethlehem Steel Company. The inquiry for this equipment was reported in the *Railway Age* for August 17, page 314.

The CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC has ordered 1,600 50-ton box cars, 2,000 50-ton gondola cars, 500 50-ton hopper cars, 150 70-ton covered hopper cars and 25 caboose cars from its shops at Milwaukee, Wis.

The LOUISVILLE & NASHVILLE has ordered 300 50-ton flat cars from the Greenville Steel Car Company. The inquiry for this equipment was reported in the *Railway Age* for October 12, page 618.

The VIRGINIAN will retire 500 of its old hopper car bodies, and 500 new 55-ton hop-

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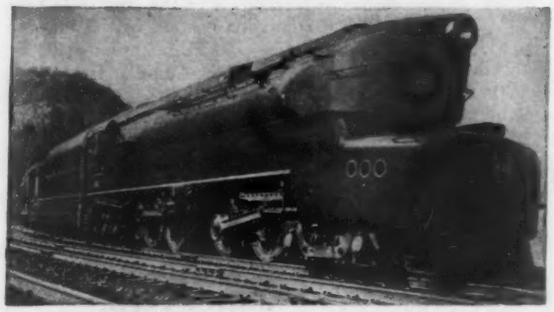
"Working 1,000-ton Trains at 100 m.p.h."



The Pennsylvania Railroad has 52 of these locomotives in service

"A steam locomotive capable of working a train of 1,000 tons at 100 m.p.h. is a phenomenon of note, even in 1946. Yet the remarkable 4-4-4-4 passenger locomotives of the Pennsylvania Railroad, * * * in trial runs have demonstrated this speed capacity and even more. * * *

"The principal features of the design are the divided drive, so that the locomotive has the equivalent power and adhesion of a 4-8-4 locomotive without the heavy moving parts of a two-cylinder engine of that type, and the use of the Franklin system of steam distribution, with poppet-valves, to which the exceptional power output involved in the feats of performance mentioned above must be largely attributed."

—*Editorial in The Railway Gazette, April 5, 1946*

FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK • CHICAGO • MONTREAL

STEAM DISTRIBUTION SYSTEM • BOOSTER • RADIAL BUFFER • COMPENSATOR AND SNUBBER • POWER REVERSE GEARS
AUTOMATIC FIRE DOORS • DRIVING BOX LUBRICATORS • STEAM GRATE SHAKERS • FLEXIBLE JOINTS • CAR CONNECTION

per car bodies, to be built at the road's Princeton, W. Va., shops, will be placed on the trucks recovered from the old cars. This program is scheduled to begin on November 1, 1947.

SIGNALING

The TOLEDO TERMINAL has placed an order with the Union Switch & Signal Company to furnish materials and install additional signaling at the all-relay interlocking at Ironville, Ohio, where the road crosses the Wheeling & Lake Erie. Materials include M-2 electric switch movements, searchlight signals, and a 5-ft. Style C control machine to replace the existing B-30 panel with relays. Signaling involved is for control of new connections to tracks of the Lake Front Dock & Railroad Terminal.

Financial

AMADOR CENTRAL.—*Lease of Right-of-Way.*—This road, operator of 11.8 miles of line between Ione, Calif., and Martell, has applied to the Interstate Commerce Commission for approval of the arrangement whereby it is now leasing its right-of-way and other properties which it sold to its parent corporation, the Winton Lumber Company, as of last January 1. The application explained that the arrangement was entered because of the applicant's financial inability to provide for repair, maintenance, and rehabilitation of the properties.

BOSTON & MAINE.—*Control of Reorganized St. Johnsbury & Lake Champlain.*—Reorganization of the St. Johnsbury & Lake Champlain under section 77 of the Bankruptcy Act and control by the B. & M. of the reorganized company will be effected as a result of authorizations granted in two recent reports by Division 4 of the Interstate Commerce Commission. In Finance Docket No. 14832, the reorganization proceeding, the division authorized Lewis A. Putnam, reorganization manager of the St. Johnsbury & Lake Champlain Railroad Company, to transfer that company's property and franchises to the St. Johnsbury & Lake Champlain Railroad, and to issue the following securities pursuant to the plan of reorganization: $400,000 of series A 4 per cent mortgage bonds, due in 1975; $300,000 of income mortgage 4½ per cent bonds, due in 1995; and 9,000 shares of $100 par common stock. Except for 3,000 shares of the latter which are to be held for redemption of the income mortgage bonds, the B. & M. will receive all of these securities; and the report authorizing it to thus acquire control is in Finance Docket No. 15327. The usual employee-protection conditions are imposed in connection with the authorizations granted in both reports.

CHESAPEAKE & OHIO.—*Equipment Trust Certificates.*—Subject to the approval of the Interstate Commerce Commission, this road has awarded an issue of $1,500,000 of serial equipment trust certificates of 1946 to Halsey, Stuart & Co. and associates on their bid of 100.071 for 1¾ per cent obligations. The bid represents a net interest cost basis to the C. & O. of approximately 1.736 per cent. (See the *Railway Age* for November 2, page 743).

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*Annual Report.*—Operating revenues of this road in 1945 totaled $228,946,936, compared with $226,709,693 in the preceding year. Operating expenses amounted to $186,859,417, compared with $160,585,506. Fixed charges were $4,027,665, compared with $4,024,534. Contingent charges were $10,703,831, compared with $11,759,212. Net income was $14,077,911, compared with $18,676,210.

GULF, MOBILE & OHIO.—*Equipment Trust Certificates.*—Division 4 of the Interstate Commerce Commission has authorized this road to assume liability for $2,400,000 of Series C 2 per cent equipment trust certificates, the proceeds of which will be applied toward the payment of $3,145,500, the estimated total cost of the following equipment: 13 1,500-hp. Diesel-electric locomotives, road freight type A units, at $137,500 each; 5 1,000-hp. Diesel-electric switching locomotives, at $89,000 each; 1 1,000-hp. Diesel-electric road switching locomotive, at $98,000; 50 70-ton all steel covered hoppers, at $4,900 each, and 150 50-ton all steel box cars, at $3,800 each. The certificates will be dated November 1 and will mature in 12 annual installments of $200,000 each starting November 1, 1947. The report also approves a selling price of 99.788, the bid of the Mercantile Commerce Bank & Trust Company of St. Louis, Mo., on which basis the average annual cost to the applicant will be approximately 2.03 per cent.

MISSISSIPPI CENTRAL.—*New Director.*—Reese H. Harris, of Scranton, Pa., has been elected a director of this road.

NORTHERN PACIFIC.—*Equipment Trust Certificates.*—This road has applied to the Interstate Commerce Commission for authority to assume liability for $6,880,000 of equipment trust certificates to finance in part the acquisition of equipment estimated to cost a total of $8,632,579. The equipment includes 6 Model F-3 4,500-hp. Diesel-electric passenger locomotives at $475,810 each; 5 Model F-3 6,000-hp. Diesel-electric freight locomotives at $574,278 each; 5 lightweight water-baggage cars, at $50,643 each; 5 lightweight mail-dormitory cars, at $71,208 each; 5 lightweight diner-lunch counter cars, at $109,157 each; 14 lightweight sleeping cars, at $97,408 each, and 5 lightweight observation-sleeping cars, at $99,113 each. The locomotives will be purchased from the Electro-Motive Division of the General Motors Corporation and the Pullman-Standard Car Manufacturing Company will supply the cars.

Construction

MISSOURI PACIFIC.—This road has been authorized by the United States District Court at St. Louis, Mo., to spend $750,000 for the erection of a new steel fabricating and freight car erection plant at De Soto, Mo. An addition to the road's present car repair shops at De Soto, the structure will be 100 ft. wide and 700 ft. long, equipped with an overhead crane and modern machinery. P. J. Neff, president and chief executive officer of the M. P., said that the plant's capacity for construction of 1,300 cars annually would take care of the road's car retirements. He stated that it was possible that some cars would be built for the M. P.'s Texas lines subsidiaries and for the American Refrigerator Transit Company, owned by the M. P. and the Wabash.

GEORGIA, ASHBURN, SYLVESTER & CAMILLA.— Division 4 of the Interstate Commerce Commission has authorized this road to construct a 1,700-ft. extension of its line to serve industries at Camilla, Ga.

Railway Officers

EXECUTIVE

Clifford S. Leet, whose promotion to assistant to president of the Bessemer & Lake Erie at Pittsburgh, Pa., was reported in the *Railway Age* of October 5, was born at Conneautville, Pa. Mr. Leet received his education in the public schools

Clifford S. Leet

and at Allegheny College, Meadville, Pa. He entered railroad service on January 10, 1901, with the Erie at Meadville. On January 15, 1903, Mr. Leet went with the Bessemer & Lake Erie as instrumentman, being appointed assistant engineer in May, 1906. From June 1913 to December 31, 1914, he served on special assignments in the office of the land agent for the same road and on January 1, 1915, he became land agent of the Bessemer & Lake Erie and the Union Railroad. Mr. Leet was appointed assistant general manager of the Bessemer & Lake Erie in May, 1936, which position he held until his recent promotion to assistant to president.

J. Curtis Platt, president of the Scranton Lackawanna Trust Company and the United States Lumber Company of Scranton, Pa., and the J. J. Newman Lumber Company of Hattiesburg, Miss., has been elected president of the Mississippi Cen-

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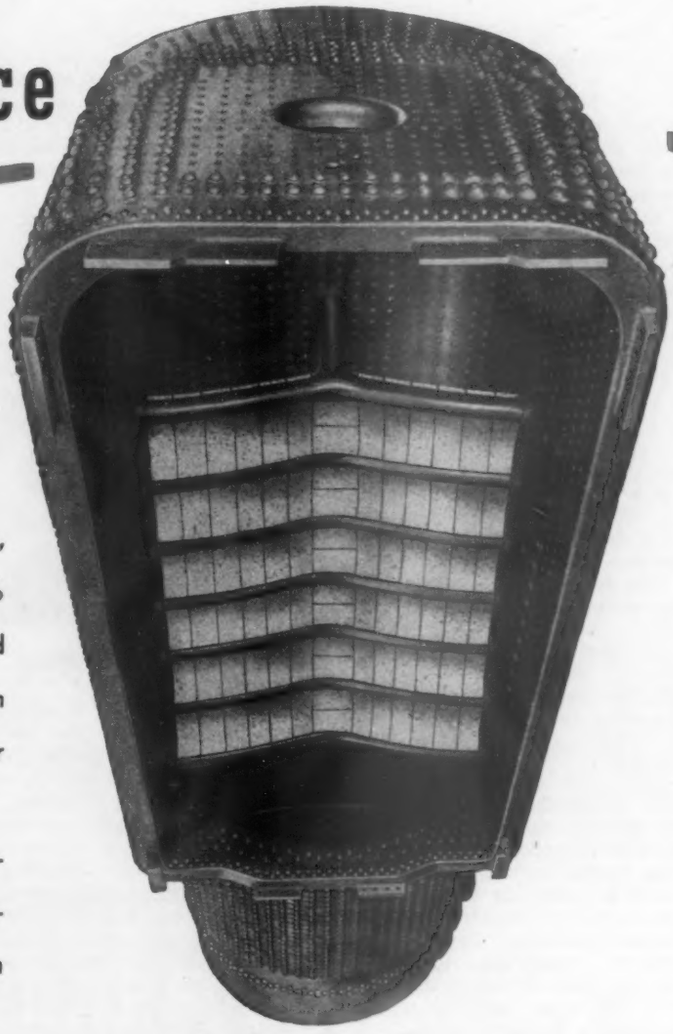
A DEFINITE REDUCTION . . . in boiler maintenance



The installation of Security Circulators, facilitating the maintenance of a 100% brick arch at all times, leads to improved combustion, with a marked decrease in honey-combing, flue plugging and cinder cutting.

This results not only in better locomotive performance and increased availability, but also in a worth-while reduction in the cost of boiler maintenance.

AMERICAN ARCH COMPANY, INC.

NEW YORK • CHICAGO

SECURITY CIRCULATOR DIVISION

tral, succeeding **Dr. U. A. Noble**, whose death was reported in the *Railway Age* of November 9.

FINANCIAL, LEGAL AND ACCOUNTING

Harry A. Walsh, member of the staff of the Jersey City law firm of Milton, McNulty & Augelli, has been appointed tax attorney for the Central of New Jersey at Jersey City, N. J. Mr. Walsh was a deputy attorney general of New Jersey from 1931 to 1944, also serving as acting prosecutor of Cape May county for 18 months during 1943 and 1944.

A. W. Lavidge, whose promotion to general auditor of the Chicago, Burlington & Quincy, with headquarters at Chicago, was reported in the *Railway Age* of November 9, was born on January 14, 1888, at Omaha, Neb., and began his railroad career there with the C. B & Q. in 1905, as a clerk in the auditor's office. Mr. Lavidge held various clerical positions and headed several departments in the auditor's office until 1913, when these offices were transferred to Chicago, and he subsequently became chief clerk to general auditor and assistant general auditor. He was appointed chief clerk to auditor of expenditures in 1915, and held this position until April, 1918, when he entered military service in World War I. In 1919 he returned to the road as chief clerk to controller, and at the end of federal control in 1920, he was promoted to assistant auditor of expenditures. He was advanced to auditor of expenditures in 1924, and was further promoted to auditor of freight accounts in 1936. Mr. Lavidge was made assistant general auditor in 1936, and held this position until his recent promotion.

OPERATING

S. C. Cherry has been appointed assistant superintendent transportation of the Norfolk Southern, with headquarters at Norfolk, Va.

T. D. Williams, whose promotion to general superintendent of the Louisville & Nashville, with headquarters at Louisville, Ky., was reported in the *Railway Age* of November 9, began his career with the L. & N. in 1926 as an instrument man on the Louisville division. In 1937 he was promoted to assistant engineer, Cincinnati division, and later served as track supervisor. In 1940 he was made assistant trainmaster, Eastern Kentucky division, and in 1942 was advanced to trainmaster, Evansville division. Mr. Williams was promoted to assistant superintendent-chief dispatcher, Pensacola division, on September 1, 1945, which position he held until his new promotion.

C. L. Bakke, assistant general manager of the Chicago, Rock Island & Pacific, with headquarters at El Reno, Okla., has been appointed superintendent of the road's Western division, with headquarters at Fairbury, Neb. He succeeds **George R. Branch**, who has resigned. **C. P. Cahill**, assistant to the general manager, with headquarters at Kansas City, Mo., succeeds Mr. Bakke at El Reno. **G. R. Huntoon**, trainmaster of the Rock Island division, has been promoted to superintendent of the Pan Handle division, with headquarters at Liberal, Kan. He succeeds **R. E. Johnson**, who has been transferred to Kansas City, as superintendent of the Missouri-Kansas division. Mr. Johnson succeeds **B. F. Wells**, who has resigned.

F. W. Ferguson, whose promotion to superintendent of the St. Louis Southwestern, with headquarters at Pine Bluff, Ark., was reported in the *Railway Age* of October 26, was born on March 25, 1891, near Huntsville, Tex. Mr. Ferguson began railroad work in 1905 as a messenger boy for the International-Great Northern (part of the Missouri Pacific System) at Huntsville, holding various positions as clerk, clerk-telegrapher, extra gang timekeeper, assistant extra gang foreman and extra gang foreman. In 1913 he joined the Cotton Belt as assistant extra gang foreman, holding this position until 1915, when he re-entered telegraph service as clerk-telegrapher at various stations in Texas.

F. W. Ferguson

From 1917 until 1919, he served in World War I, returning to the road as clerk-telegrapher. Other positions held by Mr. Ferguson are as follows: December, 1919, train despatcher, Mt. Pleasant, Tex.; 1921, chief clerk to assistant superintendent, Tyler, Tex., and later, division agent; January, 1928, division agent, Northern division; October, 1928, assistant chief dispatcher at Tyler; November, 1928, special work, coordinating rail and road service; October, 1932, assistant chief dispatcher, Tyler, Tex.; 1934, assistant superintendent, Texas division. In 1938 Mr. Ferguson was appointed assistant superintendent, Northern division, which position he held until his current promotion.

W. E. Smith, whose retirement as vice-president and general manager of the Louisville & Nashville, after 61 years of service, was reported in the *Railway Age* of October 26, was born on September 13, 1868, at Georgetown, Ga. Mr. Smith began his railroad career with the L. & N. in 1885, serving until 1890 as assistant agent, track laborer and section foreman. From 1890 until 1895 he was a track supervisor, and in the latter year was appointed road-master. In 1905 he was promoted to assistant superintendent of the Birmingham division, in charge of maintenance of way and structures, and after seven years, was elevated to superintendent of construction for the entire system. In 1914 he was made division superintendent at Evansville, Ind., and in 1920 he was transferred to the Birmingham division. Mr. Smith was advanced to assistant general manager in 1924, and to

W. E. Smith

general manager in 1931. In 1937 he was further advanced to vice-president and general manager, which positions he held at the time of his retirement.

R. S. Harms, whose promotion to terminal superintendent of the New York, Chicago & St. Louis, with headquarters at Chicago, was reported in the *Railway Age* of October 26, was born on May 12, 1889, and began his railroad career with the Chicago & Alton (now Alton) in 1910, as yard clerk and switchman at Venice, Ill. In 1911 Mr. Harms joined the Baltimore & Ohio as switchman at Lorain, Ohio, and the following year entered the service of the Nickel Plate. From 1912 until 1916,

R. S. Harms

he held successively the positions of brakeman, yard conductor, night yardmaster and general yardmaster of the Clover Leaf district at Delphos, Ohio. In 1918 he became night yardmaster at Toledo, Ohio, and in 1929, he was advanced to general yardmaster there. Mr. Harms was made terminal supervisor of the system at Cleveland, Ohio, in 1936. In 1938 he became terminal trainmaster at Chicago, which position he held at the time of his current promotion.

News Department continued on next left-hand page

Superheater Progress Is International

Some improvements in superheater development originate in Europe . . . and some on this continent.

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A-1826

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Roland L. Tooker, whose promotion to superintendent of transportation of the Illinois Central, with headquarters at Chicago, was reported in the *Railway Age* of October 5, was born on January 2, 1902,

Roland L. Tooker

at Edgewood, Ill., and entered the service of the I. C. in 1917 as a station helper at Edgewood. In the same year he became a telegraph operator, serving at various stations on the Illinois division until 1922, when he was promoted to train dispatcher at Champaign, Ill. In July, 1941, he was advanced to assistant trainmaster at Champaign, and in November, 1941, he became trainmaster, with headquarters at Freeport, Ill. In 1945 Mr. Tooker was promoted to assistant superintendent passenger service, Chicago terminal, which position he held at the time of his current promotion.

TRAFFIC

John L. Amos, Jr., commerce assistant of the Western Pacific, has been promoted to assistant general freight agent, with headquarters at San Francisco, Cal.

Russell C. Wentz, traveling freight agent of the Great Northern at Dallas, Tex., has been promoted to industrial agent, with headquarters at St. Paul, Minn.

F. M. Palmer, industrial agent of the New York, Chicago & St. Louis, has been appointed industrial commissioner, with headquarters as before at Cleveland, Ohio. **H. C. Parse** has been appointed industrial agent at Cleveland.

G. K. Reeder, general freight agent of the Missouri-Kansas-Texas, with headquarters at Dallas, Tex., will resign that position on December 1, to become associated with the Houston Port & Traffic Bureau, with headquarters at Kansas City, Mo.

E. K. West has been appointed general agent, freight department, of the Denver & Rio Grande Western, with headquarters at Denver, Colo. He succeeds **J. M. O'Neil,** who has retired due to illness, after nearly 35 years of service.

O. B. Durand, general agent of the Grand Trunk Western, with headquarters at Chicago, has been promoted to assistant general freight agent, with the same headquarters. He succeeds **J. M. Parramore,** whose promotion to general freight agent at Chicago was reported in the *Railway Age* of August 31. Mr. Durand is succeeded by **H. W. Hanes,** general agent at Detroit, Mich.

H. W. Gilbert, assistant general freight agent of the Kansas City Southern, with headquarters at Kansas City, Mo., has been promoted to general freight agent. He succeeds **B. A. Rogers,** whose promotion to director of development was reported in the *Railway Age* of September 14.

S. D. Sparkes, freight traffic manager of the Missouri-Kansas-Texas, with headquarters at Dallas, Tex., has been promoted to assistant to vice-president in charge of traffic, with the same headquarters. He is succeeded by **Harvey Allen,** assistant freight traffic manager at Dallas.

I. G. Miller, whose promotion to passenger traffic manager of the Missouri Pacific, with headquarters at St. Louis, Mo., was reported in the *Railway Age* of November 2, entered railroad service in 1912 as an assistant agent of the M. P. at Kansas

I. G. Miller

City, Mo. Following his transfer to the road's passenger department, Mr. Miller held positions successively as traveling passenger agent, district passenger agent, general agent, and assistant general passenger agent. In 1935 he was transferred to St. Louis as assistant general passenger agent, and on April 1, 1946, he was promoted to general passenger agent in charge of the road's off-line passenger agencies. He held this position at the time of his recent promotion.

Edward J. Finnegan, passenger representative for the Pennsylvania, at St. Louis, Mo., has been promoted to district passenger agent at Seattle, Wash., succeeding **Edwin C. Kellogg,** who has been given a leave of absence until his retirement next fall, after 50 years of railroad service.

J. H. A. Middlecoat, import and export representative of the Canadian National at Montreal, Que., has been appointed general agent of the road at Hong Kong, China, returning to the office he was forced to vacate when he was taken prisoner by the Japanese in December, 1941. **S. P. Healey,** former agent of the Canadian National at Yokohama, Japan, who also was interned by the Japanese, has been appointed general agent of the road at Calcutta, India. Mr. Healey joined the United States Navy immediately upon his release and served in the Pacific, being discharged last June with the rank of Lieutenant Commander.

ENGINEERING & SIGNALING

F. C. Stuart, whose retirement as signal engineer of the Elgin, Joliet & Eastern, with headquarters at Joliet, Ill., was reported in the *Railway Age* of November 2, was born on October 20, 1876, at Chariton, Iowa, and received his higher education at Simpson College. Between 1898 and 1901 he worked as a patent office draftsman and specification writer, an inside wireman for an electrical contractor, and as an assistant inspector with the Nebraska Bell Telephone Company at Council Bluffs, Iowa. Mr. Stuart entered the signal department of the Union Pacific, as a draftsman, in January, 1902. Subsequently he served as signal maintainer, signal foreman, general signal foreman, chief draftsman, office engineer and general signal inspector. In November, 1906, he entered the service of the Southern Pacific (Atlantic system), as signal engineer, with headquarters at Houston, Tex. He was appointed signal engineer of the E. J. & E., with headquarters at Joliet, in January, 1914. Mr. Stuart is a member of the Signal and Electrical sections of the A. A. R.

MECHANICAL

H. C. McFarland has been appointed master mechanic of the Peoria & Eastern (part of the New York Central System), with headquarters at Urbana, Ill., succeeding **A. M. Armer,** who has retired after 44 years of service.

SPECIAL

G. C. Howard, assistant director of personnel of the Louisville & Nashville, has been promoted to director of personnel, with headquarters as before at Louisville, Ky.

W. R. Moore, manager of the news bureau, Union Pacific, has assumed the duties of **R. B. Denton,** director of public relations, who has resigned to enter private business.

The Canadian Pacific has announced the appointment of **H. D. Brydone-Jack** as manager of personnel, succeeding **George Hodge,** whose retirement October 31 was noted in *Railway Age* of November 9.

OBITUARY

Carl Howe, a vice-president of the Erie, with headquarters at Chicago, died suddenly at the West Suburban hospital in that city on November 9. He was 76 years old.

Harry L. Worman, chief operating officer of the St. Louis-San Francisco, with headquarters at St. Louis, Mo., died suddenly of a heart attack at his home there on November 8. He was 69 years old, and had been the road's chief operating officer since 1932.

HSGI *helps move mountains over the* BESSEMER *and* LAKE ERIE

If all the iron ore, coal, and limestone carried over the double track Bessemer route during one year were heaped in one pile, it would make a respectable-sized mountain. Such tonnage gives this road greater importance than its modest mileage would indicate, for it is a major feed line from the Great Lakes to America's greatest steel center. For at least one good reason, Bessemer and Lake Erie has used Hunt-Spiller Gun Iron vital locomotive parts for more than 35 years. It knows, as do 75 other important Class I roads, that HSGI is unequaled for quality and durability.

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17 THOUSAND THROUGH ONE TERMINAL

...with the aid of NX interlocking

Peak load periods see 17,000 passengers pass through one busy terminal in a single *20-minute interval.* With the close headway necessary to handle this heavy traffic, trains must move in and out in a steady, uninterrupted flow.

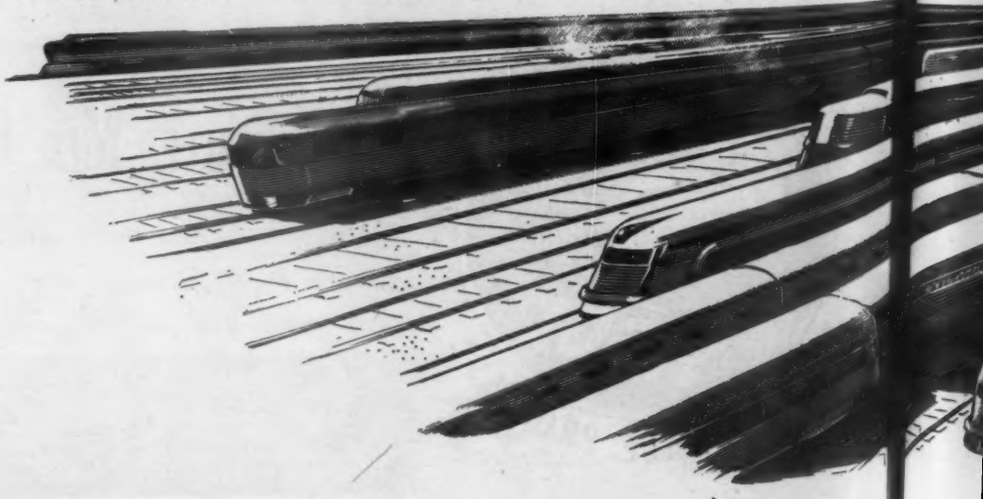
And they do, thanks to G-R-S NX electric interlocking. Here the operator sits before a single control panel on which the whole track layout is pictured. To set up a route he simply operates the eNtrance knob corresponding to point where the train is to enter the plant and the eXit button where the train is to leave.

The rest is wholly automatic. The shortest available route through the terminal lines up. Switches position, signals clear, and lights on the NX machine trace the passage of the train over the selected route. Meanwhile, the operator's mind is free to plan the next train movement.

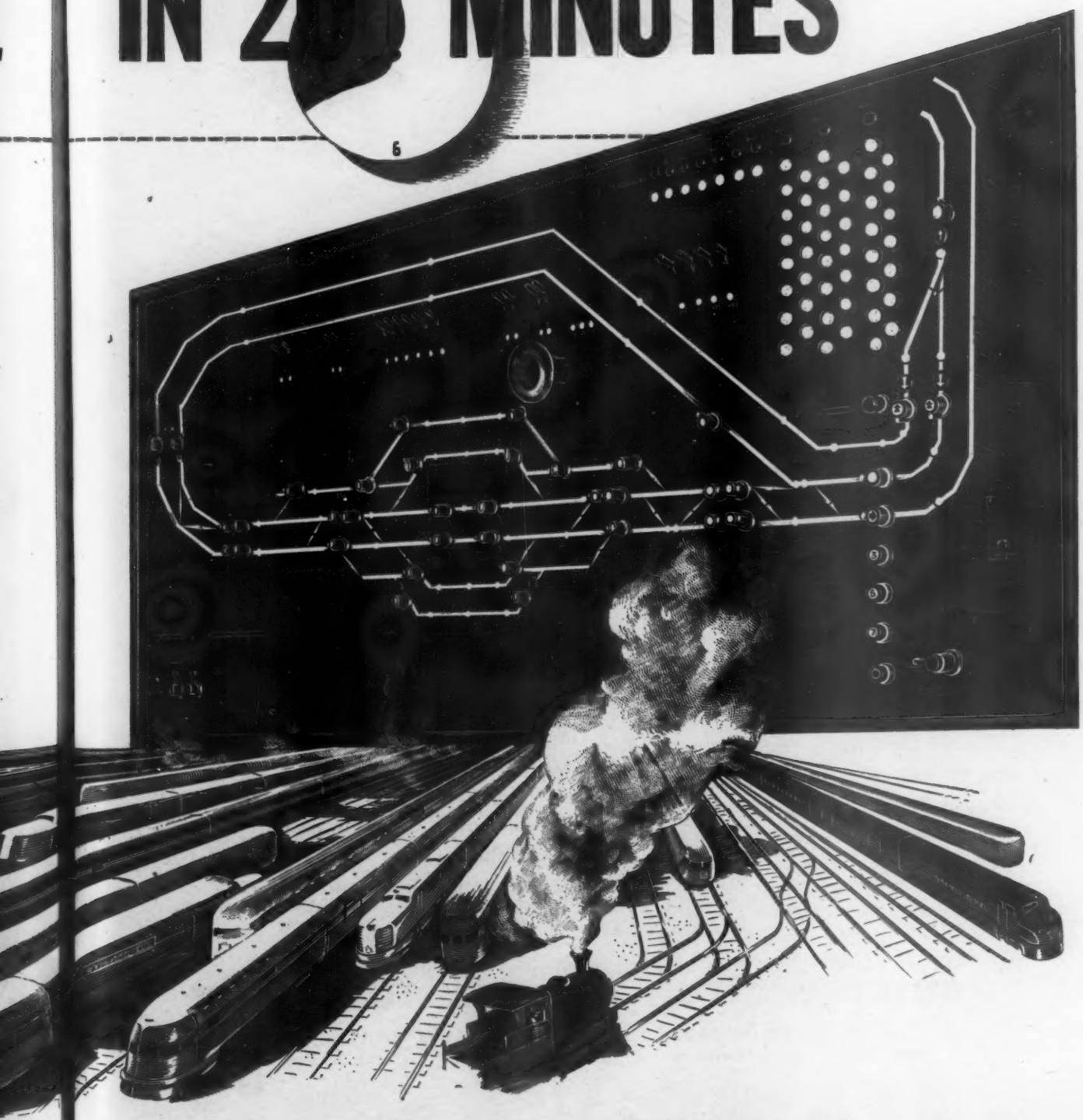
If you are seeking ways to get trains into and out of terminals faster, why not look into this new idea in train direction? G-R-S engineers will be glad to make a study of your problems, and let you know exactly what you can expect from NX. Get in touch with them through our nearest district office.

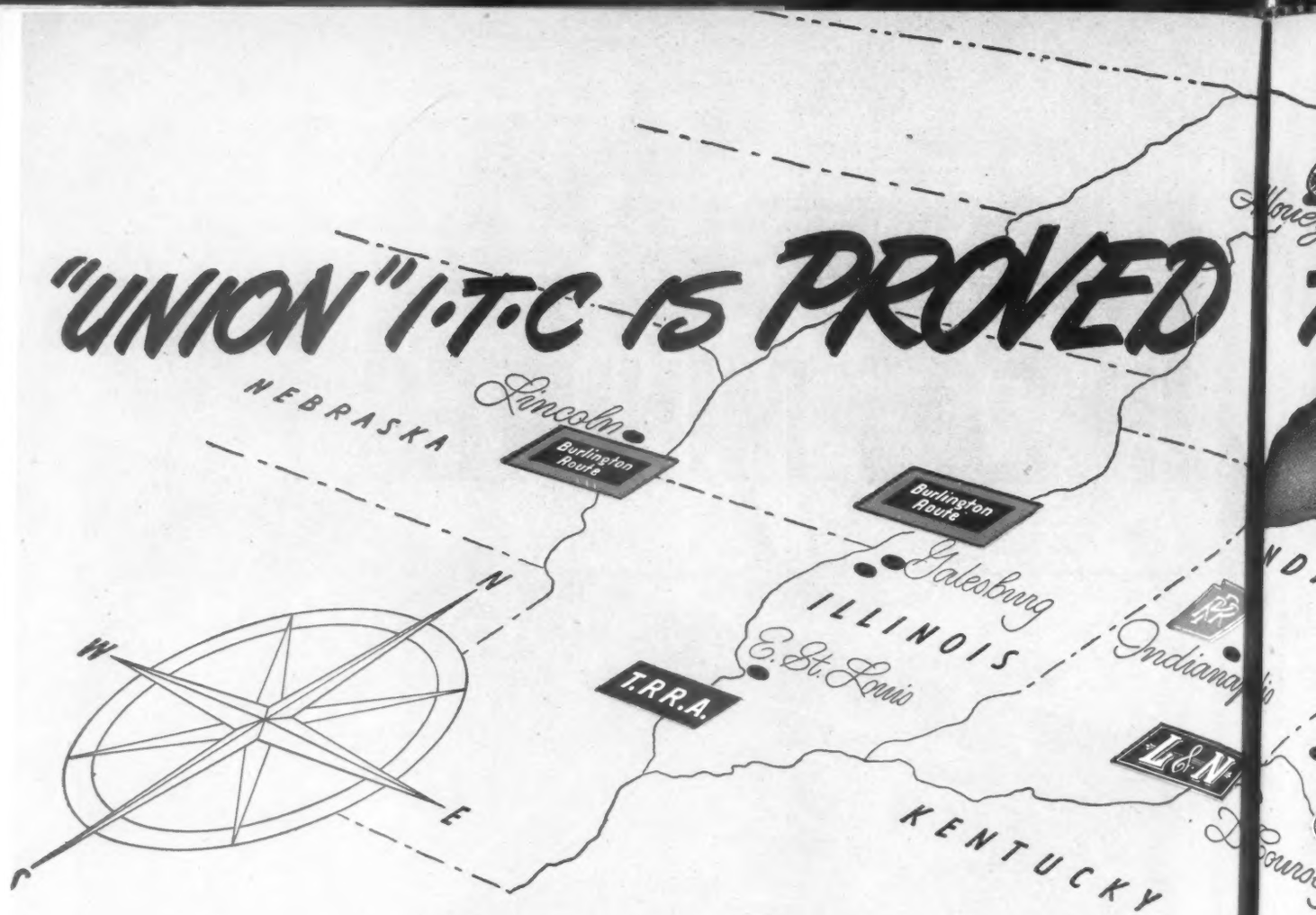
GRS General Railway Signal Company

ROCHESTER 2, N. Y. • NEW YORK 17 • CHICAGO 3 • ST. LOUIS 1



PASSENGERS IN 20 MINUTES





FOR sixty-five years, the Union Switch and Signal Company has worked with the railroads in the development of signal systems and other devices for safeguarding and expediting train operation.

Twenty-odd years ago, "Union" introduced the first train-carried electronic equipment.

With this background of experience, "Union" Inductive Train Communication was developed, road tested and refined—exclusively for railroad use—and by men who know railroad needs.

The installation and use of "Union" I.T.C. by ten railroads, in twenty-two locations* across the country, didn't occur accidentally. Its proof "under fire" in yard and road service is an asset of definite value to you in assuring practicability and efficiency of train communication for your railroad.

When you plan train communication, consider the value of this well-proved system. Call, or write, your nearest "Union" district sales office for detailed information covering the design, function, and efficiency of the most thoroughly tested and firmly established of all systems—"Union" Inductive Train Communication.

** Installations in service, or under construction.*

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Roanoke
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Newport News
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UNION" I.T.C.

"Our 11 BAKER TRUCKS *have given us* CONTINUOUS 24-HOUR SERVICE for 4 YEARS"

CASE HISTORY OF THE THOMPSON AIRCRAFT PRODUCTS COMPANY

Routine periodic inspection and lubrication pays substantial dividends in the operation of Baker Trucks at Thompson Aircraft Products Company's mammoth new Cleveland plant.

Here is a good example of what can be expected of Baker Trucks in the way of *continuous operation,* when properly cared for. According to N. J. Shibley, Superintendent of Building and Property Maintenance at Thompson, their Baker Crane Truck and ten Baker Fork Trucks are as good as new after serving three shifts per day for nearly four years —the equivalent of 12 years of normal service. No truck has been overhauled, there have been only a few minor mechanical failures, and maintenance has been almost negligible.

Actual time out of service averages less than ½ hour per day, per truck, divided as follows:

Daily check of Hydraulic System	5 min.
Battery changes (2 min. each shift)	6 min.
Weekly lubrication (45 min.)—per day . . .	7 min.
Other maintenance (Tires, brakes, inspection and adjustment of electrical controls, etc.) 45 hours per month for 11 trucks—per day	10 min.
Total .	28 min.

Except for the above and for a ten minute period between shifts when trucks are idle, they have been giving "round-the-clock" service for four years and, says Mr. Shibley, "if we continue to take good care of them, they should last indefinitely." That's *Continuity!*

To help you keep your Baker trucks operating continuously and to insure long life, write for "Industrial Truck Care Pays You Dividends."

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In Canada: Railway and Power Engineering Corporation, Ltd.

Baker INDUSTRIAL TRUCKS

(adv. p. 148) 857

NEWS DEPARTMENT

(*Continued from page 852*)

Public School on Wheels Operated by C. P.

Two school cars, which provide the only formal education available in a large area of Canada, are in almost constant operation over the lines of the Canadian Pacific. Traveling through the rugged, sparsely populated country north of Lake Superior, the cars provide classroom space for hundreds of children who have known no other school and who have never visited a town or city, and in some cases have not even seen an automobile. Most of the pupils are children of Canadian Pacific employees, but children of farmers, trappers and guides are also welcome.

According to a statement issued by the road, over 90 per cent of the children complete the full public school curriculum in these traveling schools. To serve the maximum number of children a car remains in one location only three days at a time, after which it is moved to another area. Sufficient homework is given to keep the pupils busy until the car returns. Each car is equipped with 16 desks of varying sizes, two blackboards, roller maps and a large globe. A library, from which the children can borrow books, is an essential part of the equipment.

Another public service of the road is the operation of a tree-planting car over the company's western lines. This car, which is fitted as a lecture room, and which also contains numerous exhibits on the protection of farm homes and gardens by shelter belts of trees, has been host to more than a million people in the prairie provinces of Canada.

Indicative of the interest in the car is the following comment from the lecturer's report of one stop made recently: "Only a box-car station and a general store here, but an audience of 180 met the car. First came the pupils from four rural schools located miles away. Then at night came the parents from the homesteads, all deeply interested. Weather bitterly cold."

Short-Lines Board Gets More Wage Disputes

President Truman issued a November 6 executive order creating an emergency board to investigate wage disputes between the Barre & Chelsea and St. Johnsbury & Lake Champlain and their operating employees who had been on strike for several days. The employees, represented by the Brotherhood of Locomotive Firemen & Enginemen, the Brotherhood of Locomotive Engineers, and the Brotherhood of Railroad Trainmen, are demanding the 18½ cents per hour wage increase granted to railroad employees generally last spring.

To this board the President appointed the three men who comprise also the board now considering the similar disputes between 23 short-line railroads and their employees as represented by the 15 non-operating unions. They are James H. Wolfe, Robert E. Stone, and Floyd McGown.

P. R. R. Tells Who Gets What on the Railroads

A leaflet dealing with the amount and the distribution of railroad income and railroad profits has been distributed to its employees by the Pennsylvania. As it is in the employees' own personal interest that they be correctly informed and not misled as to the truth about the industry in which they earn their living, and as the entire future of the railroads depends on reasonable and intelligent cooperation of employees with management, this leaflet has been prepared as a contribution to the correct understanding on which that intelligent cooperation must be based, it is explained.

Data taken from the employee opinion survey reported in *Railway Age* of March 2, page 445, and March 23, page 617, were used in the publication to emphasize the general lack or inaccuracy of the information on which large numbers of employees have formed erroneous ideas about railroad income and profits. The Pennsylvania's own actual income and profit position is depicted in comparison with what the opinion survey disclosed to be the prevailing beliefs of all railroad employees about the size and disposition of railroad earnings.

"Railroad employees have far more to gain or lose in the financial soundness or unsoundness of the industry than any other group of citizens in the nation," the leaflet went on to say. "With the return of peace and the end of war business, the margin between revenues and costs must be kept at a safer level, if the present railroad mileage of the country is to stay in business and railroad jobs are to be provided."

Station on Magazine Cover

The Glenview (Ill.) station of the Chicago, Milwaukee, St. Paul & Pacific is the basis for the double cover of the November issue of Coronet magazine, depicting an elderly couple waiting at the station for a train, with two youngsters nearby to see that they get aboard safely. The original painting of the illustration, by Stanley Ekman, Chicago artist, is on display at Chicago Union Station.

Station Agent Wins $200 Prize for Milwaukee Road Slogan

The slogan, "Friendly Railroad of the Friendly West," submitted in the employees' contest of the Chicago, Milwaukee, St. Paul & Pacific, won $200 top award for K. L. Everett, station agent at Delmont, S. D. Two other winning slogans were, "Speedway of the Speedliners," and "Travel with Pleasure—Ship with Confidence." Thirty smaller prizes were awarded in the $500 contest, which attracted 1,859 entries.

Government Plans Two More Alaskan Railroads

Secretary of the Interior Julius A. Krug has disclosed plans whereby the latent natural resources of Alaska may be tapped, and the national defense may be bolstered, through the amplification of transportation facilities in that territory. In addition to certain new highways, airports, and better port facilities, this program includes two railroad lines.

New and larger portables with the original Squeez-Grip valve—the Navy Standard—that made C-O-Two world famous in the fire fighting field. These new portables have more punch, weigh less and have a longer effective discharge. The completely insulated swivel tube and discharge horn is an integral part of the Squeez-Grip valve. Easy to operate—one hand control—squeeze to open, release grip to close. C-O-Two kills flammable liquid and electrical fires in seconds with clean, dry, non-damaging, non-freezing and non-deteriorating carbon dioxide gas. C-O-Two will not harm machinery, equipment, material, fabrics, finishes or food. No after-fire-mess to clean up. C-O-Two is modern fire protection. Now you get additional C-O-Two protection at no extra cost.

C-O-Two is our registered trade mark and corporate name. Be safe, specify C-O-Two when ordering.

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Sales and Service in the Principal Cities of United States and Canada

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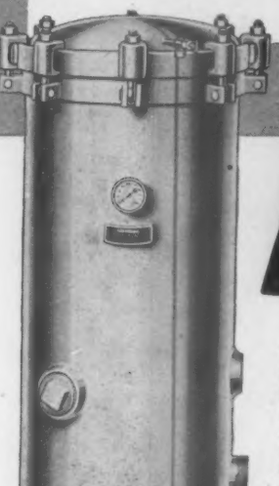
ANOTHER BOWSER DEVELOPMENT

THE EXPENDABLE CARTRIDGE FILTER

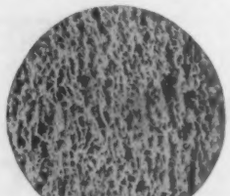


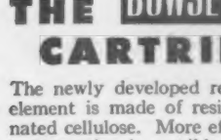
for DIESEL FUEL OIL and other PETROLEUM DISTILLATES

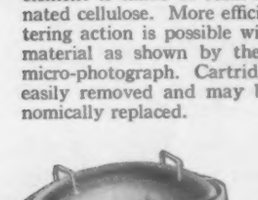
The new Bowser expendable cartridge filter is a completely new filter development. Self-contained with all necessary accessories, this expendable filter provides an unusually fine degree of filtration for Diesel fuel oils, kerosene, gasoline and similar liquids where dirt or foreign matter threatens costly equipment, and where purity of liquid is demanded. The Bowser expendable cartridge filter removes particles as small as 2 microns (.00008 inch) most economically.

THE BOWSER CARTRIDGE

The newly developed replaceable element is made of resin-impregnated cellulose. More efficient filtering action is possible with this material as shown by the 250X micro-photograph. Cartridges are easily removed and may be economically replaced.







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Available in sizes with 25, 50 or 100 sq. ft. filtering area. Capacities, based on 50-60 S. S. U. Oil, vary from 50 to 300 g. p. m. When used with gasoline the capacity is approximately 100% greater.

Bowser engineers will gladly advise the correct size for your special requirements. Write for information today.

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- Proportioning and blending systems of absolute accuracy.
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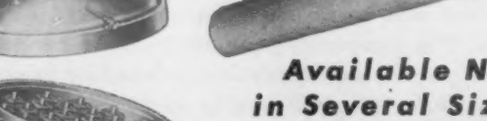
- Precise metering and accounting systems for liquid operations.
- Complete storage and dispensing systems for railroads.



BOWSER, INC. • 1321 CREIGHTON AVE. • FORT WAYNE 2, INDIANA

Surveys already have been completed for one of the railroads, Mr. Krug discloses in an article in the Army Transportation Journal. This 550-mile standard gage line is projected from Fairbanks, the northern terminal of the existing Alaska Railroad, to take a generally westerly route to Teller, a point on the shore of Bering Strait somewhat north of Nome. The secretary comments that, "though the construction of this railroad will entail heavy cost, it is to be reckoned as money well spent, for it would open vast areas for year round development of resources as well as provide rapid means of transportation between the heart of the territory and its remote outposts."

The other railroad line contemplated in the long range program outlined by Mr. Krug likewise would start at Fairbanks, taking a generally northwesterly direction to Point Barrow on the shore of the Arctic ocean. This would be a pioneering venture into what now is a wasteland, where new territory can be opened for colonization, he says, and where Navy exploration work is expected to develop oil resources.

Independents Say Big Airlines Want Freight Monopoly

Recent published reports indicate that the major passenger airlines want to create a "subsidized monopoly" of the air transportation industry and are atempting to force the Civil Aeronautics Board to recognize their claim to that monopoly, according to Charles F. Willis, Jr., executive vice-president of the Independent Airfreight Association. The statement followed reports that the Air Transport Association is planning a campaign to get a greater share of the airfreight business for the scheduled passenger airlines.

"Many Americans do not realize that the passenger airlines are maintained and supported by millions of dollars of taxpayers' money through airmail subsidies," Mr. Willis said. "On the other hand, the airfreight business was established and developed principally by veterans of the armed forces who pioneered industry without benefit of financial subsidy from the government.

"We would welcome the competition of the major airlines in the airfreight industry as long as they enter the airfreight field on the same basis as those who pioneered and established it," he continued. "The independent Airfreight Association has always favored free competition without benefit of subsidy, for that its the keystone of the development of American industry."

Mr. Willis stated that the major airlines apparently were planning to demand that the Civil Aeronautics Board recognize their claim to a monopoly of the air transportation industry because they now hold certificates granting them the right to carry "passengers, mail and property. Evidently they believe that word 'property' gives the airlines a prior right both to the transportation of airfreight and to airfreight routes," he went on to say. "The Independent Airfreight Association maintains that when those certificates were granted, hauling of freight exclusively in an airplane was unknown. The word 'property' in those certificates, we believe, applied to express and passenger baggage carried in the same plane with the passengers.

"On that basis our association has filed a petition with the C.A.B. requesting special certificates for the transportation of airfreight alone and the right to fly over routes now used by the passenger airlines. We do not want to encroach upon the business of the established passenger lines and, on the other hand, we do not want the passenger lines to attempt to take over the airfreight industry which independent companies pioneered and established. We welcome them, if they, like us, are required to file petitions for airfreight certificates and if they, like us, operate in the airfreight industry without the aid of the taxpayers' money."

His statement added that reports indicate that the Air Transport Association was drawing up a program to cancel express contracts and eliminate the distinction between airfreight and air express, to set up joint rates, to arrange inter-line shipments, and to establish connecting service with existing surface transportation.

Completes New Lightweight All-Purpose Refrigerator Car

Completion of a new experimental lightweight, all-purpose, railroad refrigerator car designed to provide more efficient and dependable transportation of perishables was announced this week by O. O. Mills, manager of the Fruit Growers Express Company in Washington, D. C.

Beginning November 15, this car, which was developed as part of a special experimental program being carried on by Fruit Growers and its associated companies, the Western Fruit Express and the Burlington Refrigerator Express, will be exhibited in a number of larger cities in the East, South and Central West. After being displayed in various parts of the country, the car will be put into regular service.

With its superstructure built entirely of aluminum alloy, the car weighs approximately three and a half tons less than the conventional refrigerator cars now in use on American railroads. According to Mr. Mills, the perishables shipped in the car will ride "like passengers in post-war luxury trains." This will be accomplished through the use of such appliances as self-alining trucks, improved bolster springs and roller journal bearings.

Besides easy riding qualities, the car embodies the features, including inside dimensions, recommended by the Refrigerator Car Committee of the United Fresh Fruit and Vegetable Association and other members of the perishable industry for a standard freight refrigerator car. The new features include built-in electric lights for convenience in loading and unloading when daylight is inadequate; exterior thermometer equipment which registers the interior temperature of the car; cushioned rubber-sealed doors to prevent loss of heat, and a special mastic and plywood flooring with upward flanged side-wall connections which will serve as a barrier against moisture.

When the car is not in use for refrigeration or heater service, the bunker bulkheads can be moved and nested against the end walls of the car to afford greater loading space. Many of the car's improvements in design were developed by the Fruit Growers Express Company in its car-testing laboratory at Alexandria, Va.

IF YOU WANT TO SHOW
Pleasing
Profits
Mechanize your material handling operations and stop worrying about price increases.
You can *insure* your profit position by converting your unskilled labor into skilled labor and achieve mass production at low cost.
CLARK TRUCTRACTOR conducts surveys of material movements and recommends new methods and means to reduce production costs.
A copy of Clark's "Material Handling News" is yours for the asking.
Plan to visit our exhibit, National Material Handling Exposition, Cleveland, January 14 to 17, 1947.
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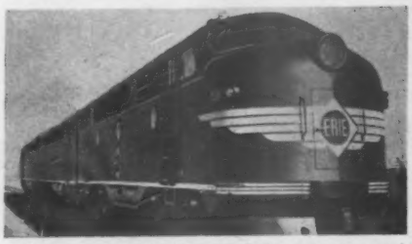

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Current Publications

Trade Publications

Fireside Facts, 4 pages. Published by Oxi Corporaton, Gary, Ind. Free.

This illustrated bulletin outlines the use of a product called "Oxi crystals", said to be highly effective in the removal of residual deposits of combustion on tubes and the fire side of boilers using coal, oil, blast furnace gas, and other fuels.

Standard Stokers—Publication No. 80. 16 pages, illustrated. Published by the Standard Stoker Company, Inc., 350 Madison avenue, New York 17.

This plastic-bound booklet describes the different types of Standard stokers and the advantages to be derived from mechanical firing. Cut-away locomotive illustrations, in colors, show how the Standard MB, BK, and HT type stokers carry the coal from tenders to fireboxes and how the coal is distributed over the firebeds.

Pamphlets

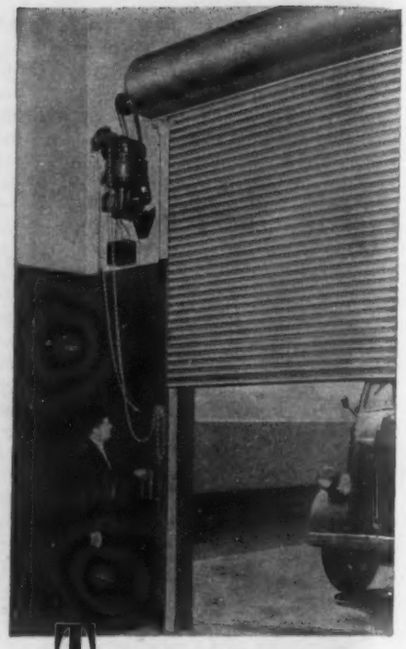
Vacation Travels; A Survey of Vacation Habits and Plans of Readers of the Woman's Home Companion. 28 pages, illustrations, charts. Published by the Research Department, the Crowell-Collier Publishing Company, 250 Park ave., New York, N. Y. Free.

This report is devoted to a survey of vacations in the past, future vacations, both within and outside of the United States, and conjectures on future travel possibilities. Railroad people will be particularly interested in the answers to the questions pertaining to the different modes of transportation used.

News From Home (Autumn, 1946). 21 pages, illustrations. Published by the Home Fleet of Insurance Companies, 59 Maiden lane, New York, N. Y. Free.

The "News From Home" is the house organ of the Home Fleet of Insurance Companies. This Autumn, 1946, number is devoted to railroad history. Articles include "Ten Minutes for Refreshments" which describes early railroad dining facilities, "Hands Up! or The Great Train Robberies," "Oh! for the Life of a Commuter" and "Album of Railroadiana." All are well-illustrated. An editorial praises the railroads for the part they have played in developing the country and for their recent war efforts. Operations of the Railroad Insurance Association are also outlined. Reprints of the inside cover illustrations which are in color and which are suitable for framing are available upon request.

Commodore Vanderbilt (1794-1877) Forefather of the New York Central, by Gustav Metzman. 40 pages. Text of an address delivered at a luncheon of the Newcomen Society of England in New York on No-



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vember 1 at which Mr. Metzman was guest of honor. Printed at the Princeton University Press, Princeton, N. J.

Reviews the career of Commodore Vanderbilt from the time he started his first ferry from Staten Island to New York, until his death, during which time he developed what is now the New York Central System.

Freight Transportation Sales, by Ralph W. Cooke. 39 pages. Published by the freight traffic department, Pennsylvania Railroad. Free distribution as text for group meetings of the railroad's sales force.

Written by a special representative of the Pennsylvania traffic department, this booklet is a study of freight transportation sales on the railroad, which seeks to set forth the more essential factors and principles influencing the merchandising of railroad freight transportation. While it has been designed primarily as a text for group meetings of the railroad's sales force, it is also being made available to all members of the freight traffic department, whether members of such groups or not.

It goes into considerable detail regarding the general field of the railroad salesman, with emphasis on his obligations, the organization of his day, hints on interviewing customers, relations of the salesman with other departments and desirable personal qualities.

Books

Proceedings of the Forty-Fifth Annual Convention of the American Railway Engineering Association. 786 pages. Published by the American Railway Engineering Association, 59 E. Van Buren st., Chicago 5, Ill. Price, $8.00.

Contains the reports and discussions presented at the annual meeting of the American Railway Engineering Association held at the Palmer House, Chicago, Ill., on March 12-14.

Universal Directory of Railway Officials and Railway Year Book, 1946-1947, compiled from official sources under the direction of the Editor of the "Railway Gazette." 588 pages. Published by the Directory Publishing Company, Ltd., 33 Tothill st., Westminster, S. W. 1, London, England. Price, 20 shillings.

This annual publication contains its usual complete complement of railroad information. The first section is devoted to listings of individual railroads throughout the world, together with the names, titles and addresses of principal officers. Statistics on mileage, equipment and financial results are included, in most cases brought up to date since the war. The second part of the book is devoted to statistical and other information, including tables on the development of the world's railway mileage, principal gages used throughout the world and detailed statistics on British railways. The tables showing the fastest scheduled runs in the U. S. A. and streamlined trains in the

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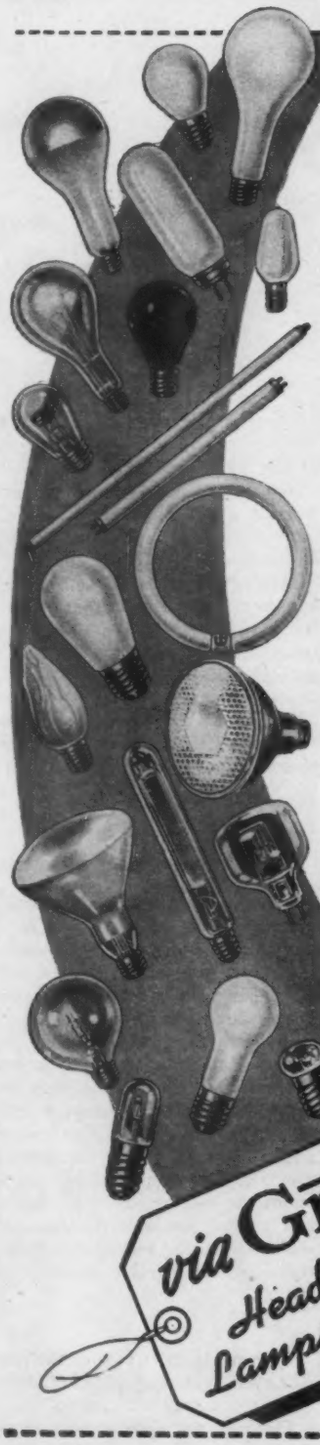

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United States have been revised to cover the year 1945. The usual three indexes, country, general and personal, are included.

Locomotive Puffs From the Back Shop, by Leon R. Harris. 56 pages, non-illustrated. Published by Bruce Humphries, Inc., Boston, Mass. Price $2.00.

A small volume of 25 popular verses by an experienced shop employe of the Rock Island at Silvis, Ill. Possessing the verve and hearty manliness of Robert Service's poems about Alaska, these poems cover such subjects as the need for full service for payment received; the gospel of hard work; the joy of gaining talent and knowledge through intense application to duty; "safety first"; the patriotism of railroad shopmen and the "glory" of the steam locomotive.

Metallurgy, by Carl G. Johnson, third edition, 418 pages, illustrations. Published by the American Technical Society, Drexel ave. at 58th st., Chicago 37, Ill. Price, $5.00.

This practical survey text in metallurgy stresses the importance of the physical and chemical properties of metals to anyone who is concerned with the design, shaping, sizing and fabrication of metal products.

China's Railways as a Market for Pacific Northwest Products; A Study of a Phase of the External Relations of a Region, by Eldon Griffin, 78 pages. Published by the Bureau of Business Research, College of Economics and Business, University of Washington, Seattle, Wash. Price, $1.50.

Outstanding facts about China's railways and their potential importance to our Pacific Northwest industry, are discussed in this report. In addition to chapters on background facts on China, railways of China, opportunities for the United States to help build China's railways and how to do business with China, there is a section devoted to sources of information for further reading and reference.

Articles in Periodicals

The Four Main Line Railways of Great Britain, 1939-1945, by C. E. R. Sherrington. Bulletin of the International Union of Railways, June-July, 1946, pp. 2-13.

Annual reviews of the operating results of the four British railways were published each year from July, 1828, to June, 1939, in the "Bulletin of the International Union of Railways." This, the 14th review, resumes the series interrupted by the war. The article is divided into two main sections. The first covers the more important events of the war period, and the second explains the figures showing financial results and capital account, mileage and rolling stock, and traffic and operation, in so far as they are comparable between 1938 and 1945.

Railway Wage Changes, 1941-46. Monthly Labor Review, September, 1946, pp. 335-341.

Outlines the three major movements in the railroad wage structure which have occurred since 1941. The hourly wage increases resulting from each movement for both the "ops" and the "non-ops" are given in tabular form. This short article should prove useful as a guide in tracing the various steps which occurred in each wage case.

The Transportation Problem, by William J. Cunningham. Harvard Business Review, Autumn, 1946, pp. 58-73.

Changes in transportation technique and in the relationship between the several modes of transportation have created new and complicated problems of public policy. Professor Cunningham discusses these problems and finds that there is need for a revision of the regulatory acts and the organization of regulatory bodies. He says that "Such revision should recognize the vital need of emphasis on coordination of transportation agencies to the end that the public will have the benefits of a *system* of transportation, with all its parts fairly and efficiently correlated."

The Survival of Free Enterprise, by Paul G. Hoffman. Harvard Business Review, Autumn, 1946, pp. 21-27.

Mr. Hoffman appraises our economy and discusses the "dynamism of private enterprise." He then proceeds to discuss the role of the federal government in our capitalistic system and the responsibilities of business men for keeping our economy dynamic and for promoting stability.

Mexican Rails, Revamped, Hit Brisk Postwar Stride, by A. Edward Stuntz. Foreign Commerce Weekly, September 21, 1946, pp. 5-7 and 52.

Outlines the activities of the United States Railway Mission in helping to rehabilitate the Mexican railway system and establish a railway educational program.

Hungarian Railroads Face Uncertain Future, by Seymour T. R. Abt, Foreign Commerce Weekly, October 26, 1946, pp. 7 and 34.

Discusses the reduction in mileage, the condition of equipment, and the outlook for the future.

The Standard Oil, Child of the Erie Ring, 1868-1872, Six Contracts and a Letter, by Chester McArthur Destler. Reprinted from the Mississippi Valley Historical Review, June, 1946.

"With their authenticity established, the significance of these documents springs from the light that they throw upon certain hitherto obscure activities of the managers of the Erie Railway in 1868. Contemporaries asserted as early as 1872, and Simon Sterne's shrewd direction of the Hepburn investigation in part confirmed in 1879, the existence of an "oil ring" that developed in the late 'sixties out of the active interest taken by the Erie Railway magnates in the petroleum trade."

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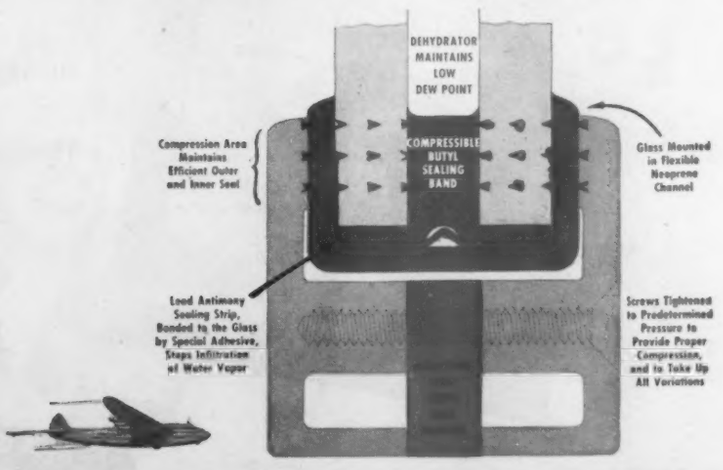
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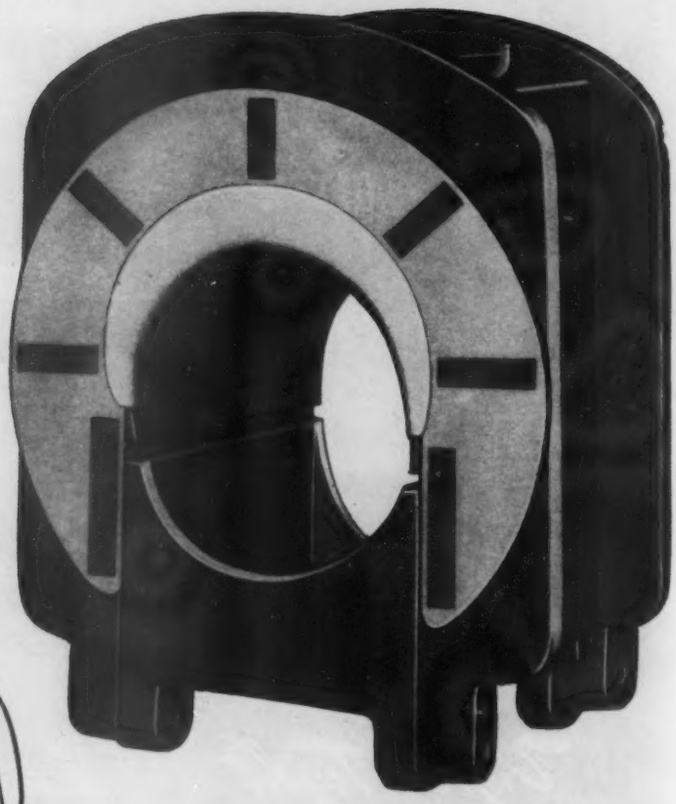

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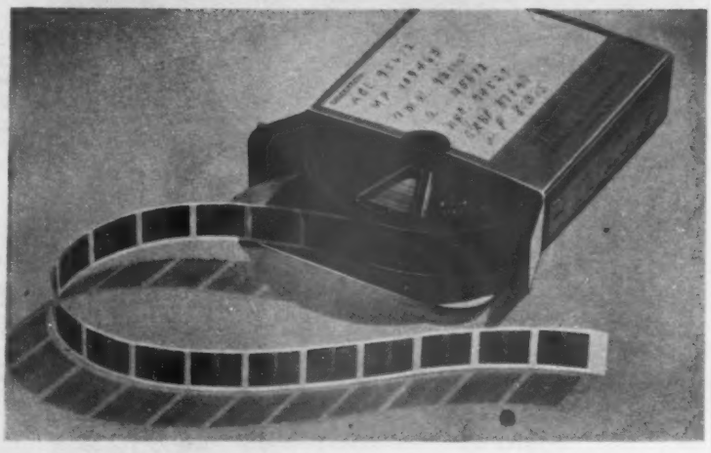

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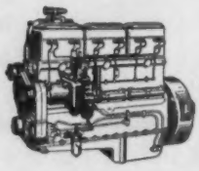
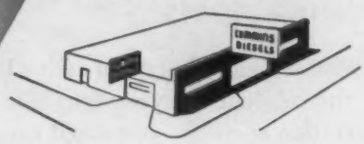


THE DEALER



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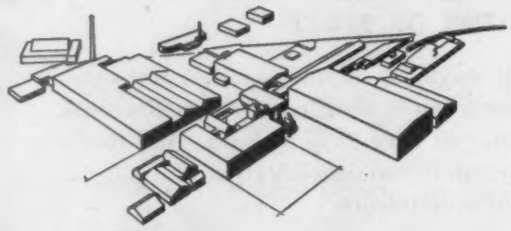

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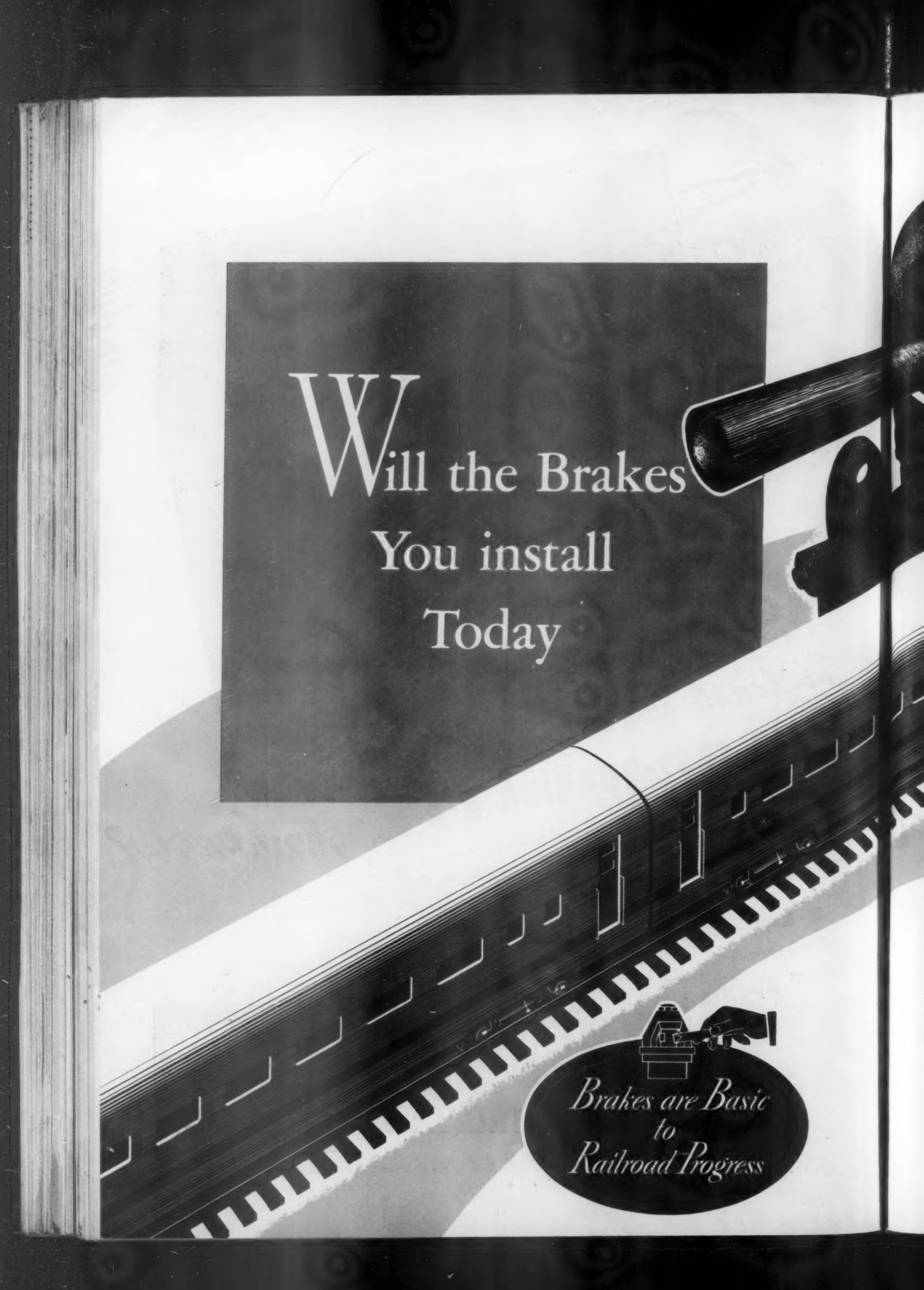
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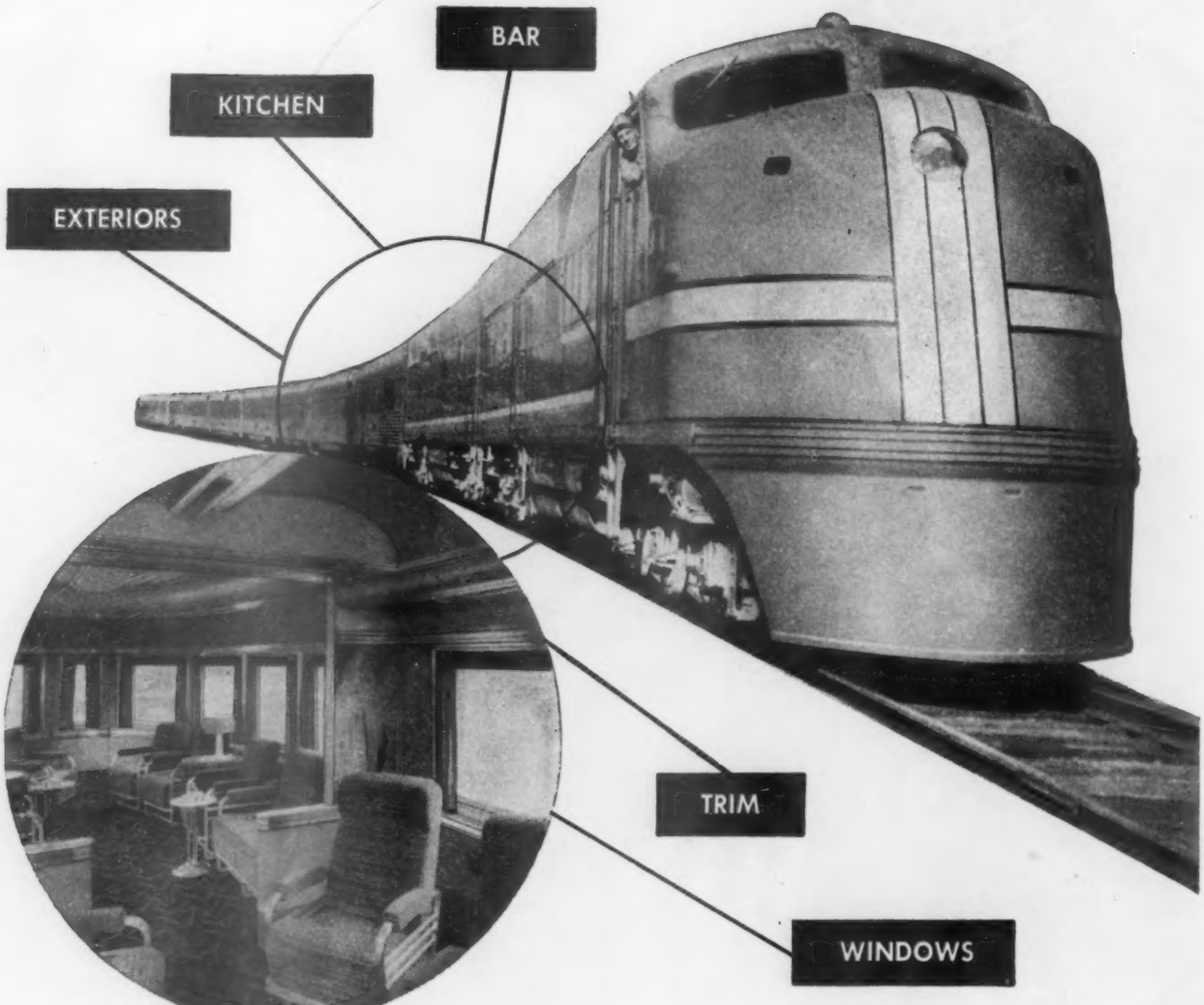

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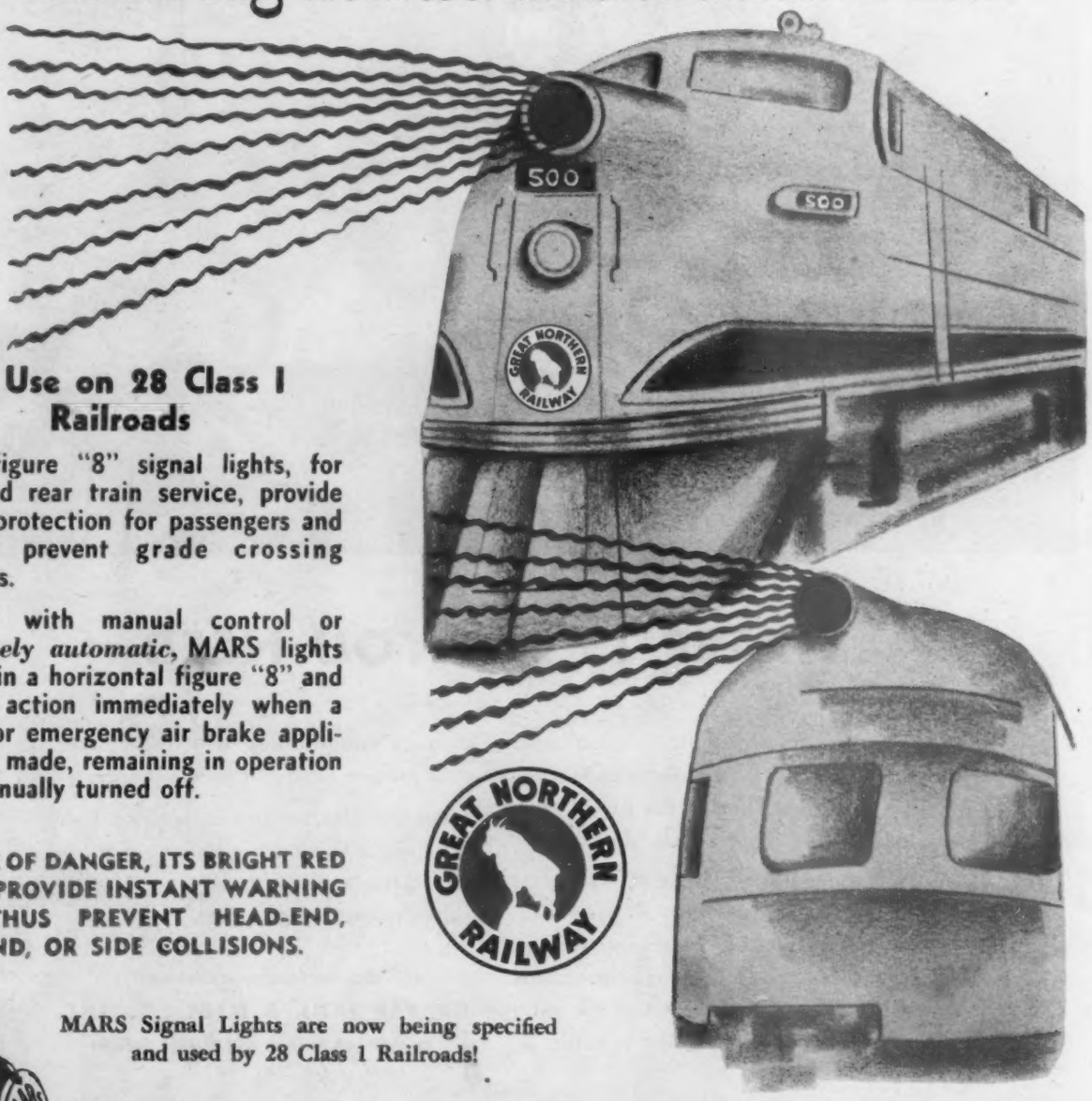

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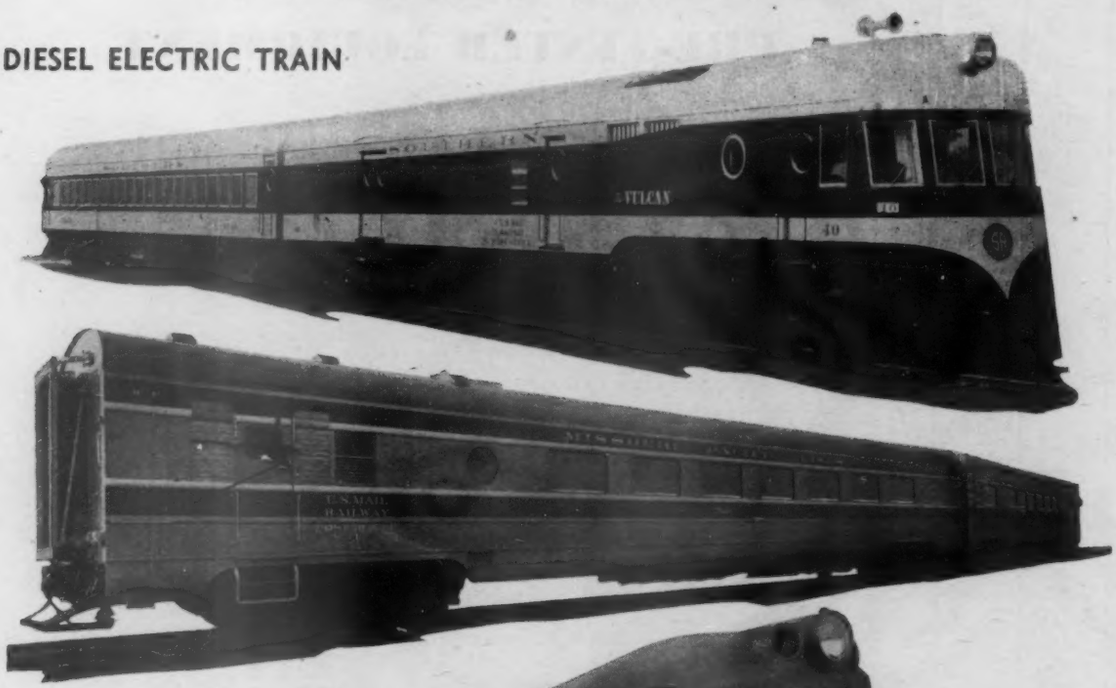

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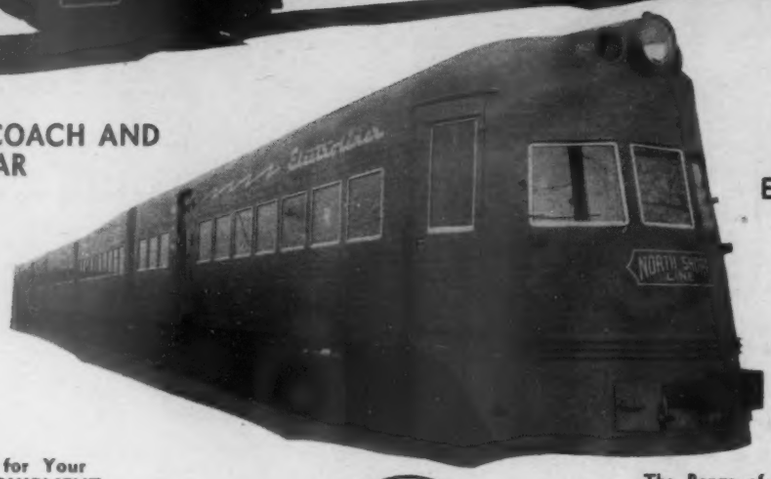

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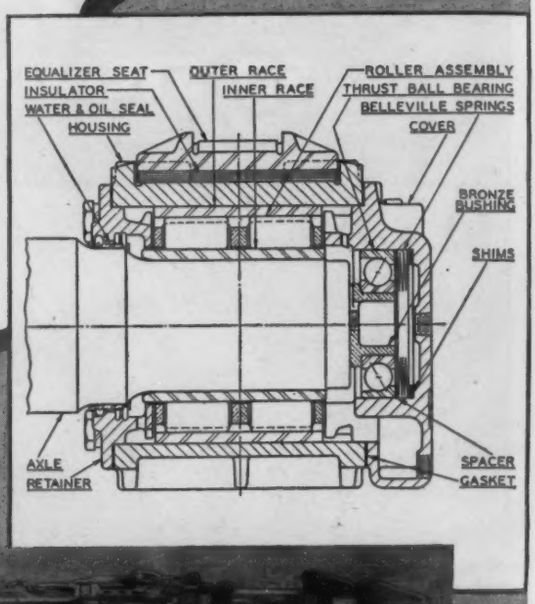
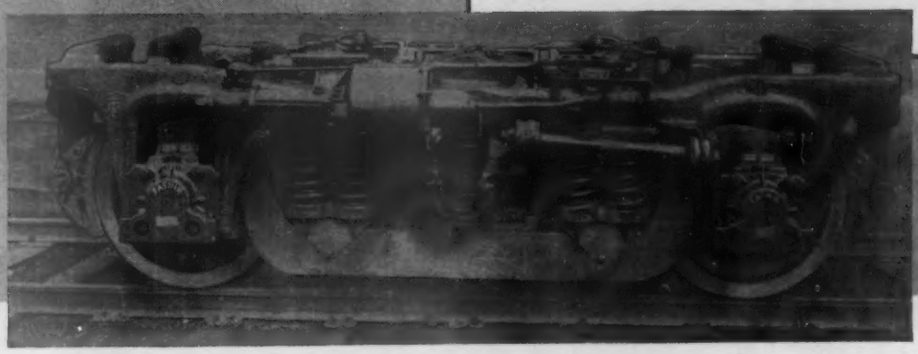
MONROE

FAFNIRS ARE CUTTING MAINTENANCE COSTS for leading roads





Records of two million and more miles in continuous, main-line, high-speed operation have proved the trouble-free, economical performance of Fafnir Railway Journal Bearings. The ingenious construction of Fafnir Railway Bearings utilizes a combination of two separate bearings – a cylindrical roller bearing carries radial loads while an independently-acting ball thrust bearing absorbs end thrust. Maintenance costs are reduced to a minimum.

HERE'S WHY-

Ease of Installation: The assembled housing with its straight rollers easily slides onto the prepared journal. Will fit either the narrow A.A.R. standard or wide pedestal openings.

Small Stock Sufficient: At wheel removal periods simply remove the bearing from the axle requiring wheel change or turning and apply same bearing to the new axle.

Spring Loaded Ball-bearing, Thrust Assembly in contact with end of axle eliminates thrust bearing wear thereby causing no increase in bearing lateral.

Easy to Check Lateral: Unnecessary to remove cover – just remove pipe plug in cover and insert a ½" standard thread bolt or gage to engage bushing – measure total play.

Flange Life Lengthened: One-piece housings are reversible, end for end, a feature that doubles the wear-life of the flanges, eliminates necessity for frequent liner change.

Lubrication Costs Cut: Positive sealing prevents entrance of dirt and water, and loss of lubricant whether oil or grease. Actual service records prove longer lubricant life and fewer renewal periods.

Fafnir's experienced Railway Engineering Department is prepared to work in close cooperation with railroads in designs for application of Fafnir Bearings to railway equipment.

Reduce starting loads up to 90%...
cut maintenance two-thirds

FAFNIR BALL & ROLLER JOURNAL BEARINGS

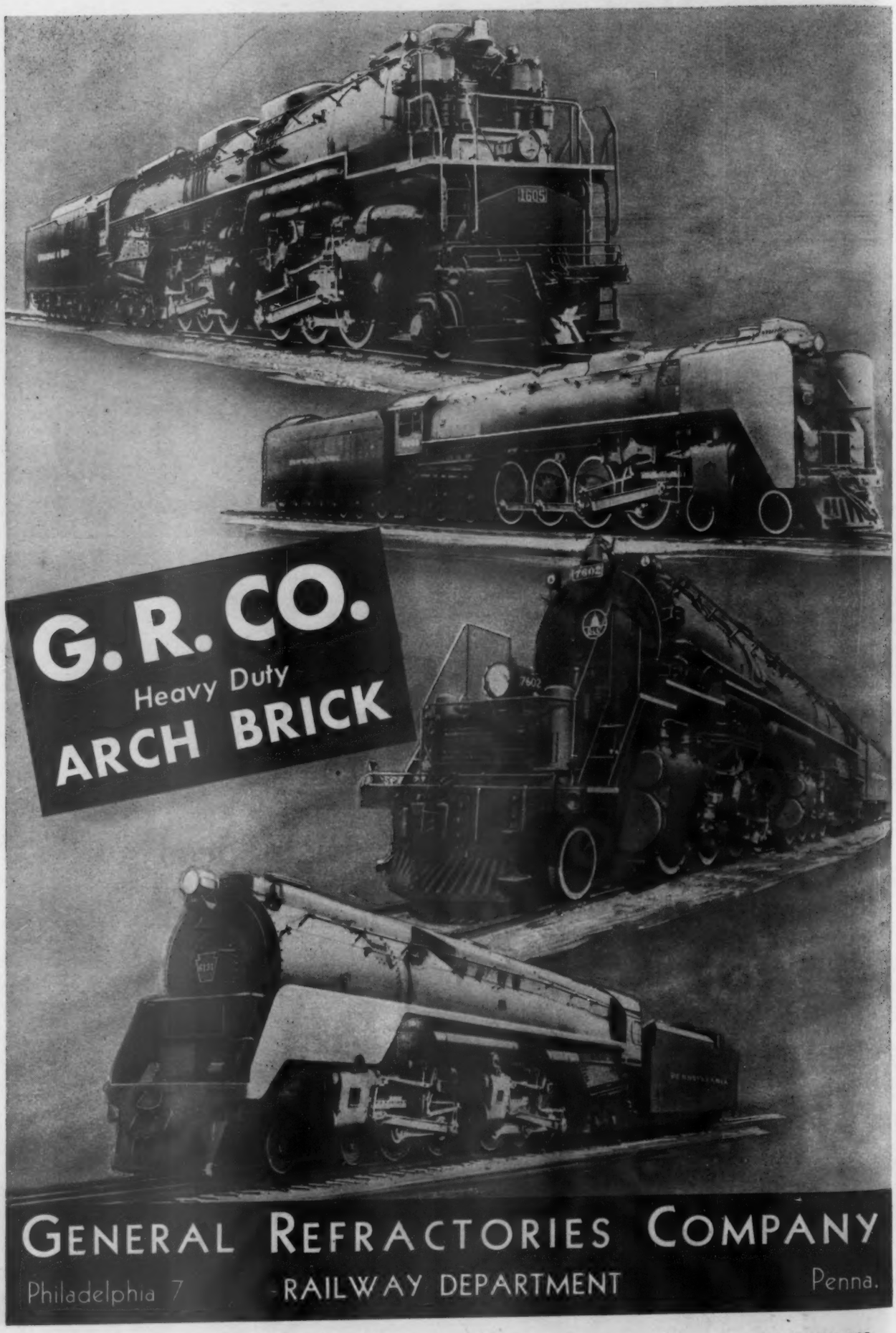
The Fafnir Bearing Company New Britain, Conn.

APPROVED JOINT BARS

that meet

Rigid Standards of High-Speed Ultra-Modern Passenger Service

THE RAIL JOINT COMPANY Inc.
50 CHURCH ST. NEW YORK 7, N. Y.


G. R. CO.
Heavy Duty
ARCH BRICK
GENERAL REFRACTORIES COMPANY
Philadelphia 7
RAILWAY DEPARTMENT
Penna.

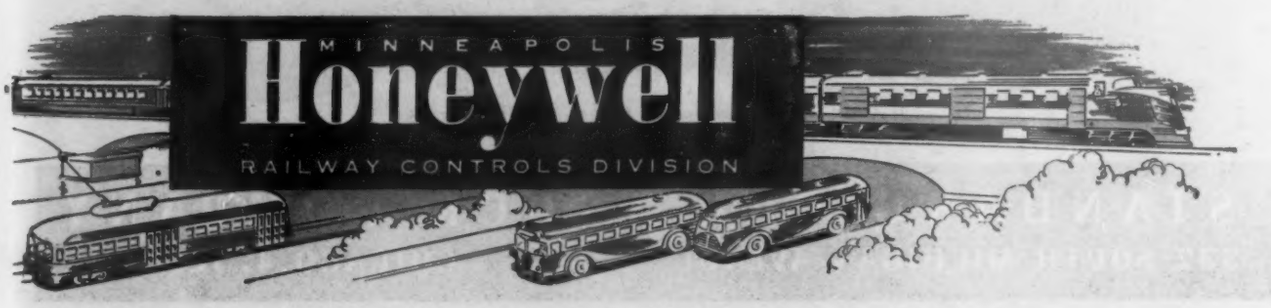
Now... MODUFLOW
FOR RAILWAY CARS

ELECTRONIC CONTROL GIVES PASSENGERS COMPLETE HOME COMFORT REGARDLESS OF WEATHER CONDITIONS

THE new high standard of heating comfort Moduflow has established for homes is now available for railway passenger cars.

Instead of the conventional on-and-off method of heat supply, this new Honeywell development offers you an *electronic* system of passenger car air conditioning control. The result—continuous, air-conditioned comfort—an end to drafts and overheating. Automatically, compensation is made for such typical variations as outside temperatures, solar effect, train speed and passenger load.

Heat is furnished continuously to replace the constant loss and is modulated in response to changing heat requirements. In other words, the replacement of heat is electronically "metered" to supply just the right amount to balance the loss. Summed up, this new electronic control system provides the ultimate in sensitivity and speed of response, regardless of rapidly changing load and weather conditions. Get complete information now about this newest Honeywell railroad development. Write Minneapolis-Honeywell Regulator Company, Railway Controls Division, 435 East Erie Street, Chicago 11, Illinois. Canadian Plant: Toronto 12, Ontario.

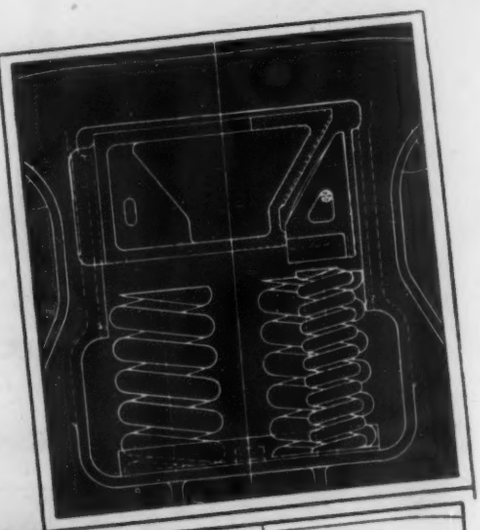


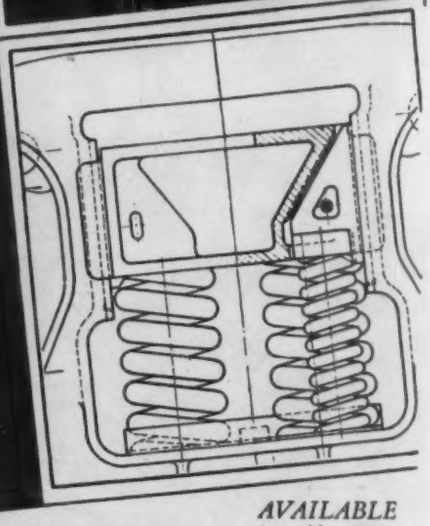
Easy to Assemble

1 Patented features simplify assembly.

2 When the bolster is lifted friction shoe pressure is relieved.

3 This permits easy removal of side frames and springs.



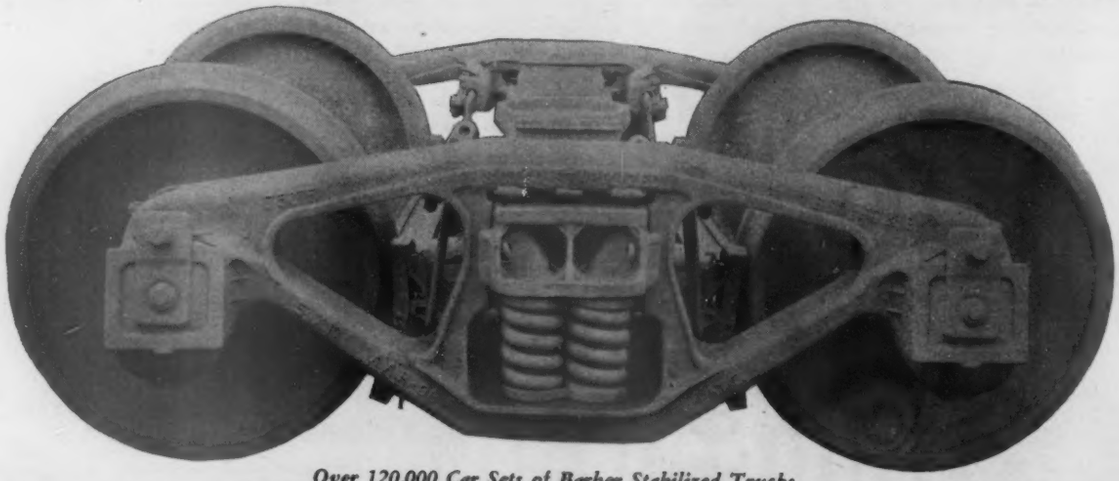


These parts compose the STABILIZING UNIT which, at small cost gives multiple advantages in easy lateral and vertical ride. Assembled, they fit tight and stay tight, eliminating harmonic bounce, wear on bolsters and columns, and broken springs.

Their simplified construction means quick installation or repair.

AVAILABLE in all spring travels from 1⅝" to 3 13/16".

BARBER SPRING-PLANKLESS STABILIZED TRUCKS



Over 120,000 Car Sets of Barber Stabilized Trucks are in use or on order on 58 different railroads and private car lines

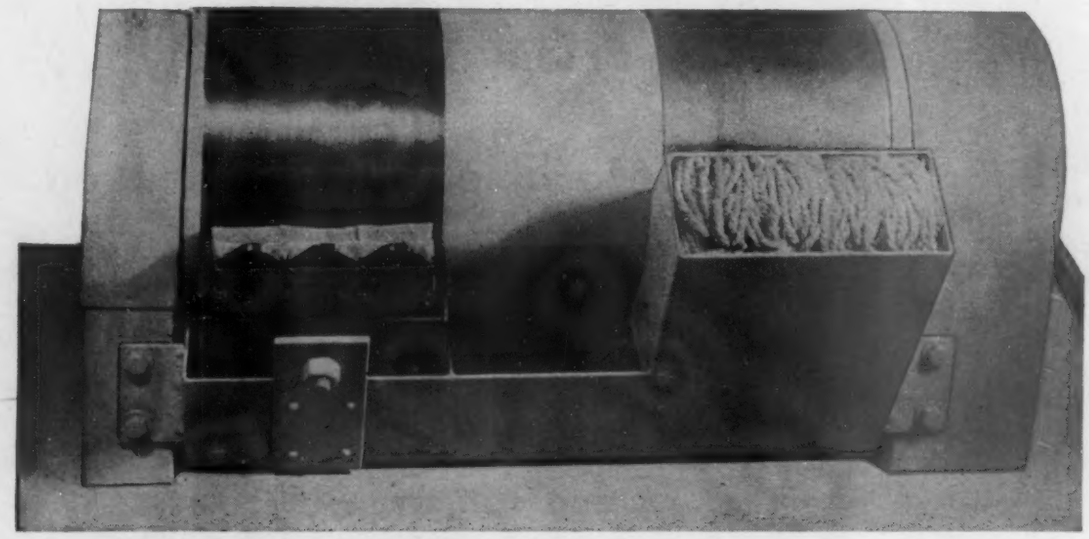
STANDARD CAR TRUCK COMPANY
332 SOUTH MICHIGAN AVENUE CHICAGO 4, ILLINOIS

See the difference!

4 ——— TO ——— 1

Full Oil Feed From Felpax Lubricator

Starved Oil Feed From 98% Wool Yarn



The illustration shows a section of a Diesel Electric traction motor suspension journal.

One end is lubricated by a patented FELPAX lubricator.

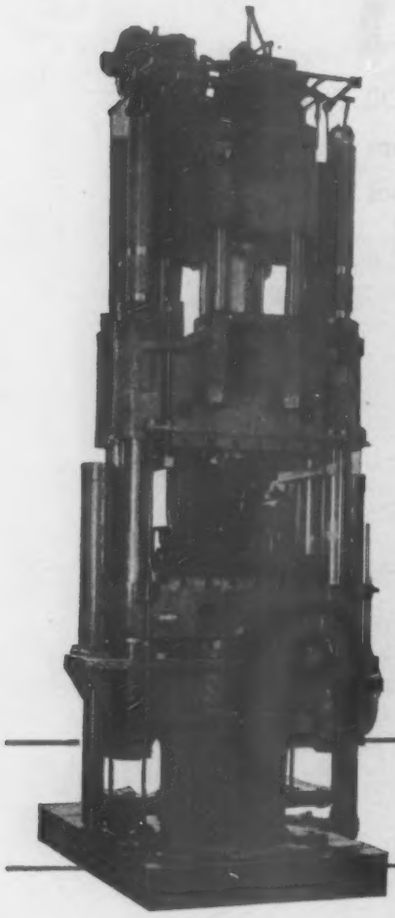
For comparison the other end is lubricated by first quality 98% wool yarn.

The ratio of oil available to the journal is 4 to 1 in favor of the FELPAX lubricator, yet oil consumption is normal. Wheel change-outs due to lateral and radial wear on the suspension bearings are reduced as much as 75%—Because FELPAX supplies sufficient lubricant to the thrust faces as well as the bearing, thereby increasing the availability of power and effecting a substantial savings in labor and material.

MILLER-FELPAX COMPANY

WINONA, MINNESOTA

Why STOP at just the STEEL CASTINGS?



We handle the

Manufacture of Complete Units . . .

or any Sub-assembly . . .

Machined and Assembled

100% to "SPECS"

500 TON HYDRAULIC PRESS
Typical Example of PSF Contract Manufacturing

The particular job illustrated above pulled two companies out of an uncomfortable spot; the machinery builder, who was tied up tight on other work; and the customer firm, who might have waited months for badly needed equipment if PSF hadn't stepped into the breach.

Now, we're not merely trouble-shooters and we're not bidding for only that kind of work. We are making the point, however, that PSF is perfectly equipped to produce steel castings of any size or description—and much more particularly—that we have all the modern machining, heat treating and testing equipment needed to carry work along to a 100% finished assembly job, exactly to your specifications.

Anywhere along the line—from steel castings "as cast" or machined, clear up to finished assemblies—call on PSF for work of thoroughgoing quality and precision.

PITTSBURGH STEEL FOUNDRY CORP.

Glassport, Pa.

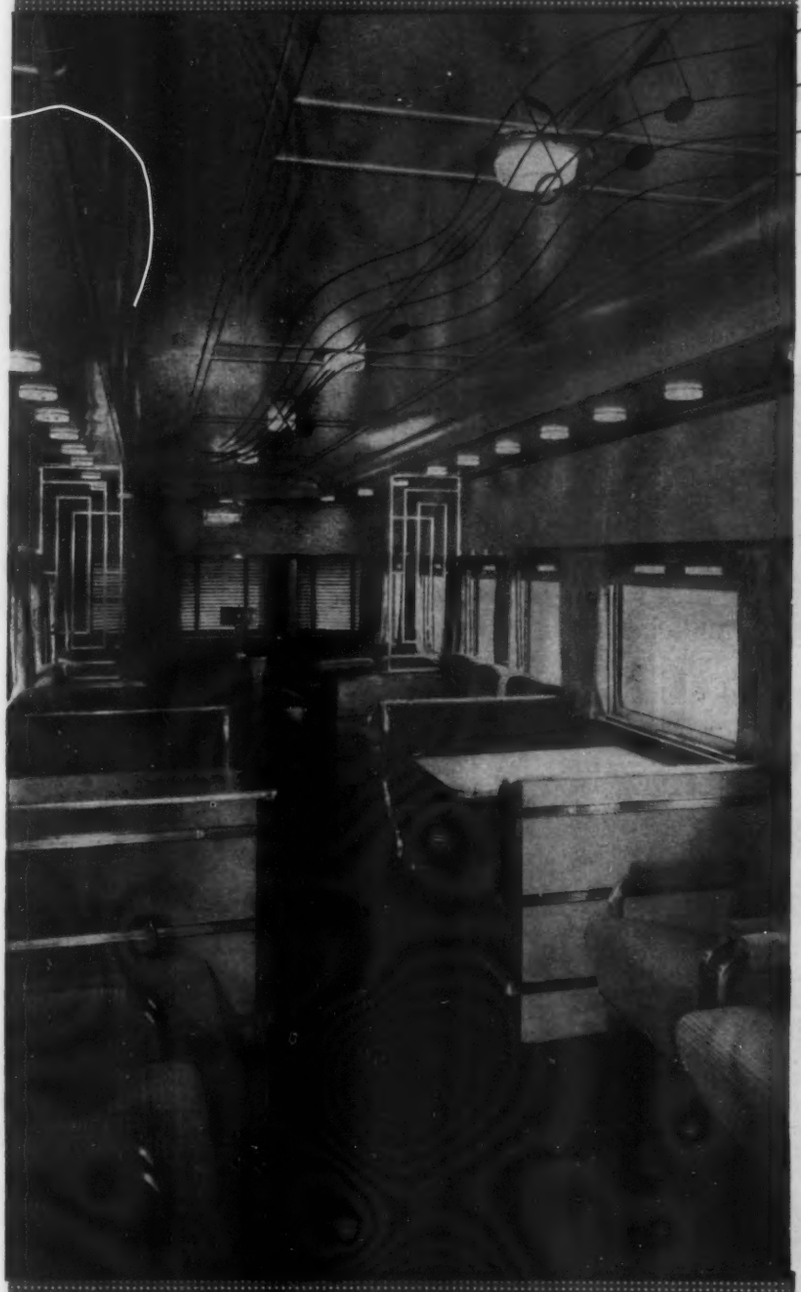
Plants: **Glassport, Pa. and McKeesport, Pa.**

Sales Offices: **New York • Chicago • Philadelphia • Washington**

WBD 675

48 YEARS OF STEEL CASTING KNOWLEDGE

MULTI-VENT



ideal for public address installations

An added service to passengers that is winning the approval of railroad operating men is the provision for music, radio, or announcements throughout the train. In Multi-Vent equipped cars the installation of loud speakers is remarkably simple, and provides uniform sound distribution with easily controlled volume. In the average size car two speakers are mounted in the air supply duct above the Multi-Vent panels. The speakers are concealed, and like air distribution with Multi-Vent, the sound is uniformly and pleasingly distributed. The controlled volume which is essential to passenger comfort requires the adequate distribution which is so easily obtained by this type of installation in connection with Multi-Vent. Amplifier, radio receiver and record player may be installed in a head end car, or in lounge or tavern car, and a variety of arrangements can be provided for announcements. Automatic volume adjustments can be used to care for varying needs in stations or on the road.

Are you familiar with all the advantages of Multi-Vent draftless ventilation? Complete information will be sent upon request, or a demonstration will be arranged at the Multi-Vent laboratory.

THE PYLE-NATIONAL COMPANY

1334-58 North Kostner Avenue • Chicago 51, Illinois

Offices: New York • Baltimore • Pittsburgh
St. Louis • St. Paul • San Francisco

Export Department:
International Railway Supply Co., New York
Canadian Agents:
The Holden Co., Ltd., Montreal

STOP
LOOK
LISTEN

On some twenty-three railroads in the United States our steel toe safety shoes can be purchased in the railroads' company stores on a pay roll deduction plan. If the railroad where you are employed is one of those having our service, you will find the right shoe for your job made of the right materials to give WEAR and also a correct fit to give COMFORT. Ask your nearest Railroad Stores Department for information.

Shoes for TRACKMEN — WAREHOUSEMEN — SHOPMEN — TRAINMEN — FOREMEN

HEAVY OUTSIDE WORK

Black, Heavy, Work-Shoe Leather Blucher. Double leather outsole, rubber heel. Also available with composition outsole. Sizes 5 to 11 and 12. Widths D, EE.

UNION MADE

Safety First SHOE COMPANY

HOLLISTON, MASSACHUSETTS

Makers of Industrial Shoes for a Half Century

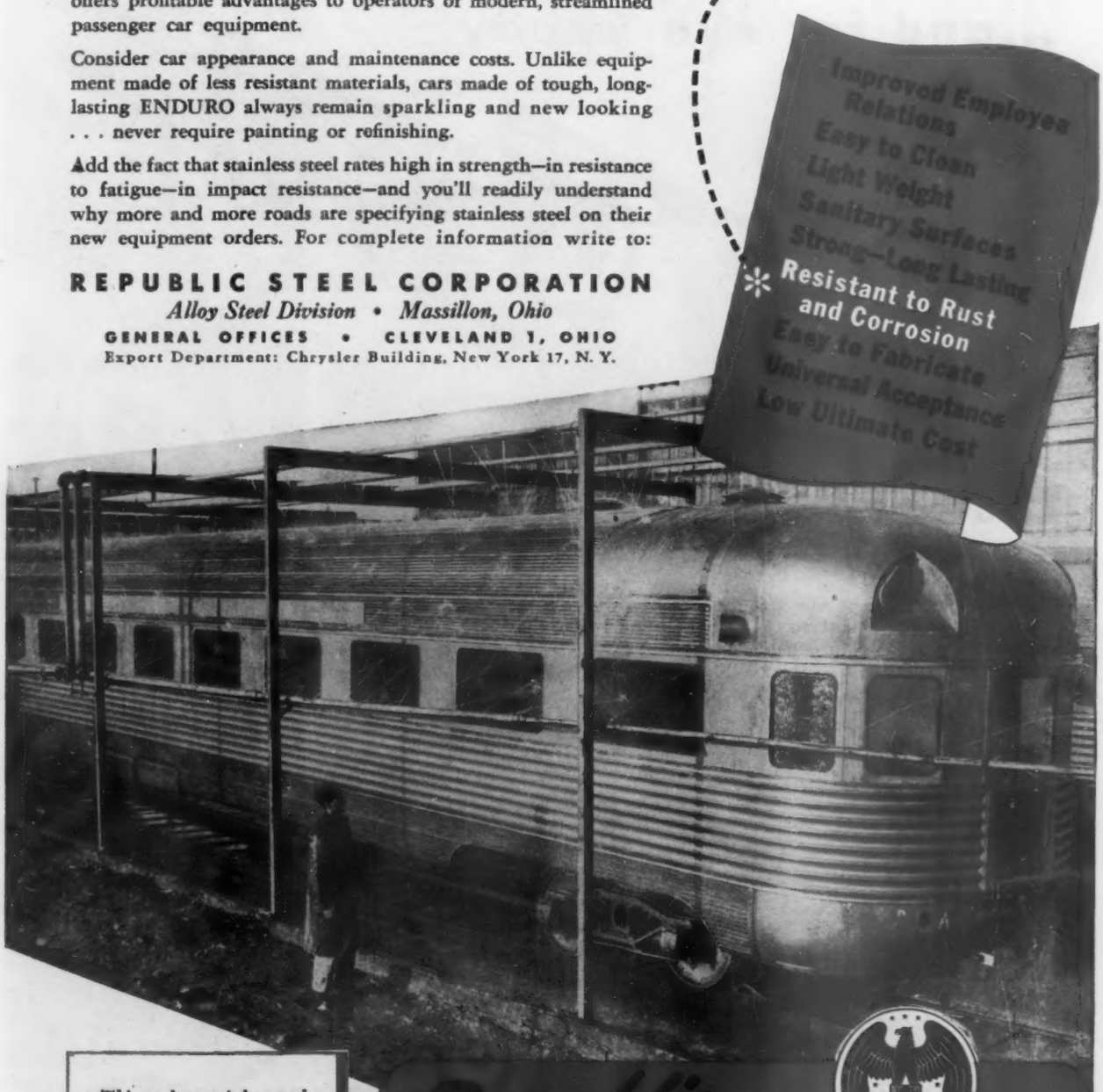
Enduro Pays in many ways*

● Any way you look at it, Republic ENDURO Stainless Steel offers profitable advantages to operators of modern, streamlined passenger car equipment.

Consider car appearance and maintenance costs. Unlike equipment made of less resistant materials, cars made of tough, long-lasting ENDURO always remain sparkling and new looking . . . never require painting or refinishing.

Add the fact that stainless steel rates high in strength—in resistance to fatigue—in impact resistance—and you'll readily understand why more and more roads are specifying stainless steel on their new equipment orders. For complete information write to:

REPUBLIC STEEL CORPORATION
Alloy Steel Division • Massillon, Ohio
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N. Y.



This modern stainless steel observation car is undergoing a rigid "storm" test for water-tightness and resistance to corrosion.

Republic
ENDURO STAINLESS STEEL
Reg. U. S. Pat. Off.

Other Republic Products include Alloy, High Strength and Carbon Steels — Pipe, Sheets, Plates, Bars, Bolts and Nuts, Boiler Tubes

REDUCING DIET FOR RAILROADS

...and for everybody

The important advantages of a steel casting for a railroad guard rail end filler are these:

1. Less weight to buy. The cast steel part weighs 18 pounds, against a weight of 46 pounds for the previous design and material—weight saving, 60%.
2. 60% less weight to transport. It costs just as much for a railroad to carry its own materials as it does to carry pay load.
3. 60% less weight to lift and handle—that's help for storage and track crews. The cast steel part is strong, rigid and resists wear and breakage—it does everything it's supposed to do better than its heavier predecessor.

There you have the reasons why railroads use more steel castings than any other industry. Just sound economy—just good intelligent management.

Are *your* products suffering from useless overweight? Are you paying a penalty for not being as modern as steel castings?

The first step in making an improved product, or in cost cutting, is to plan it that way—a steel castings engineer can help you. Steel Founders' Society, 920 Midland Building, Cleveland 15, Ohio.

MODERNIZE AND IMPROVE YOUR PRODUCT WITH

STEEL CASTINGS

2 heads are better than 1

WHEN IT COMES TO SOLVING BOILER WATER TROUBLES....

Locomotives taking on water from Dearborn wayside treating plants run from one water district to another . . . without feedwater worries.

Problems of foaming, corrosion, and scale have been settled for them . . . permanently. First, by the Dearborn Engineer who made on-the-spot tests of boiler water under actual operating conditions. Then, by Dearborn laboratory chemists who studied his reports and developed scientific treatment formulations to control undesirable characteristics in each water district. Finally, by periodic call-backs to check operating efficiency.

2 way treatment...

MAKES BOILER WATER COMPLETELY TROUBLE-FREE

TREATMENT FOR SCALE Dearborn treatment, formulated to meet individual scale conditions, not only stops formation of new scale, but disintegrates scale already present. Boilers remain in service all the while.

TREATMENT FOR FOAMING Boilers are kept foam-free with Dearborn POLYALKYLENE POLYAMIDE TYPE ANTIFOAM (U. S. Patent No. 2,328,551). Recommended for inclusion in the Dearborn anti-scale treatment. Nonsaponifiable and nonhydrolyzable in akaline boiler waters. Can be dispensed through existing equipment or applied manually.

Dearborn

TRADE MARK REGISTERED

"THE LEADER FOR OVER HALF A CENTURY"

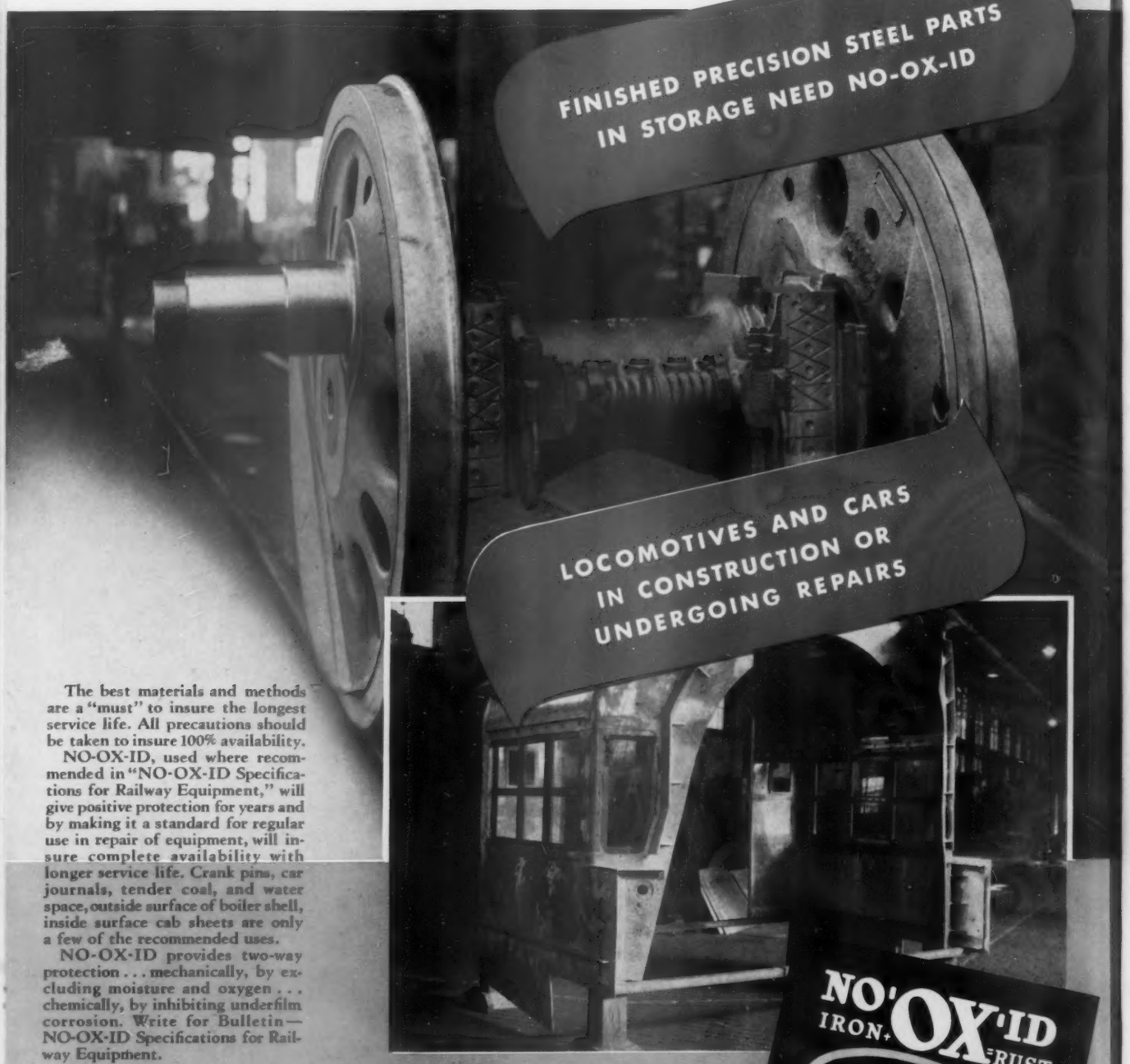
ENGINEERING SERVICE AND WATER TREATMENT

Dearborn Chemical Company

310 S. Michigan Ave., Chicago 4 — 807-15 Mateo St., Los Angeles

205 E. 42nd St., New York — 2454 Dundas St., West, Toronto

ON RAILROADS *No-Ox-id* PROVIDES *long-time protection* AGAINST CORROSION . . . .



The best materials and methods are a "must" to insure the longest service life. All precautions should be taken to insure 100% availability.

NO-OX-ID, used where recommended in "NO-OX-ID Specifications for Railway Equipment," will give positive protection for years and by making it a standard for regular use in repair of equipment, will insure complete availability with longer service life. Crank pins, car journals, tender coal, and water space, outside surface of boiler shell, inside surface cab sheets are only a few of the recommended uses.

NO-OX-ID provides two-way protection . . . mechanically, by excluding moisture and oxygen . . . chemically, by inhibiting underfilm corrosion. Write for Bulletin—NO-OX-ID Specifications for Railway Equipment.

(Photos courtesy American Locomotive Co.)

NO-OX-ID
IRON + OX = RUST
REG. TRADEMARK AUG. 27, 1918

The ORIGINAL RUST PREVENTIVE

Dearborn Chemical Company
310 S. Michigan Ave., Chicago 4 — 807-15 Mateo St., Los Angeles
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FAST FREIGHT ARRIVES SAFER

When it's Completely Cushioned

by **SCULLIN** L-V **TRUCK** *The New*

LATERAL-VERTICAL CUSHIONED MOTION

Now you can meet the demand for higher-speed freight service – and still slash lading damage losses. The ingenious new Scullin L-V Truck design completely cushions *both* lateral and vertical motion – ends destructive lurch and sidesway – makes stepped-up schedules safe for lading, cars and track.

It's simple, sturdy, trouble-free • No costly, hard-to-maintain attachments • Assures constant, controlled truck alignment • Price and weight are comparable to conventional trucks.

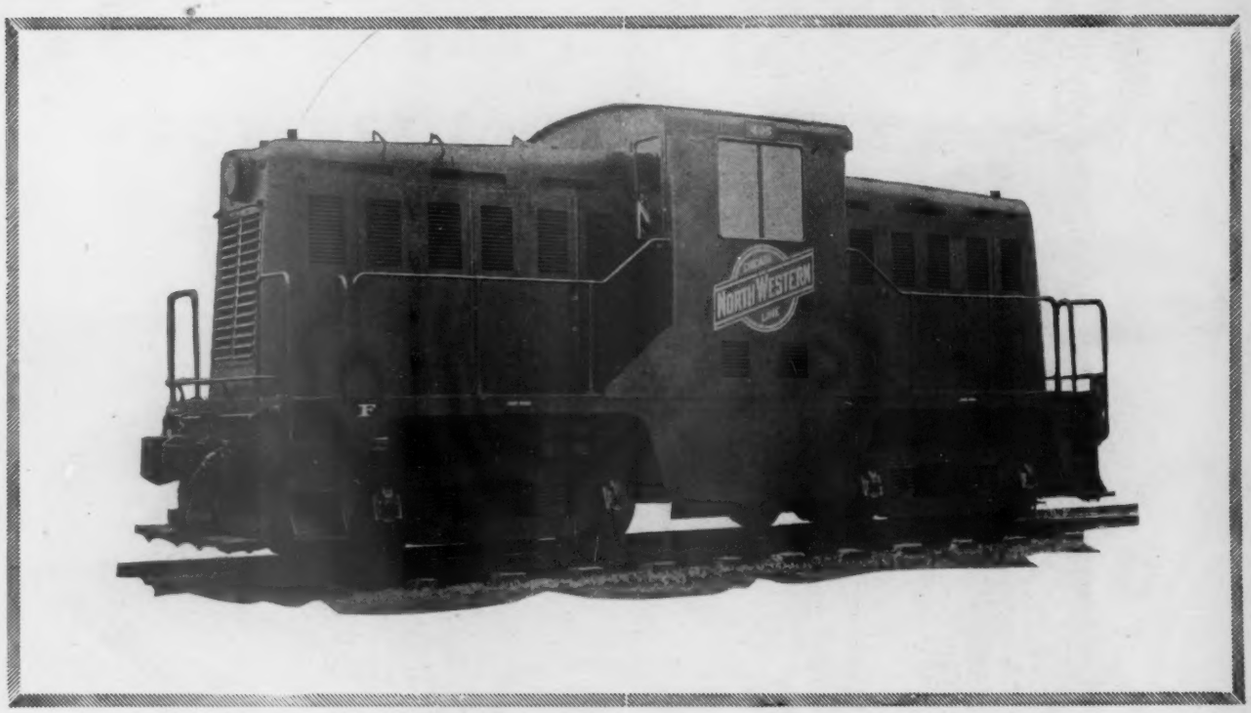
FOR COMPLETE DETAILS WRITE:

STEEL CASTING MANUFACTURERS SINCE 1899

SCULLIN STEEL CO

SAINT LOUIS 10, MISSOURI

NEW YORK • CHICAGO • PHILADELPHIA • CLEVELAND • ST. PAUL • BALTIMORE • RICHMOND, VA. • MEXICO CITY, D. F.



EASY ACCESSIBILITY

MEANS QUICK — ECONOMICAL MAINTENANCE

All moving parts of any machine require regular inspection and preventative maintenance check-ups, but in a Whitcomb locomotive because these parts are so easily accessible, quick to service and maintain, there is a considerable saving effected in time, labor and money.

High tractive effort performance over wide speed ranges, ease of operation, excellent visibility for the operator, provided by the full view center cab—all these built-in characteristics of Whitcomb Diesel Electrics result in fast, safe and satisfactory switching and hauling at costs that are far lower than you would reasonably expect.

DIESEL ELECTRIC LOCOMOTIVES FROM 25 TONS TO 95 TONS

BLW THE BALDWIN GROUP

THE WHITCOMB LOCOMOTIVE CO.

ROCHELLE, ILL.

Subsidiary of THE BALDWIN LOCOMOTIVE WORKS

WILLIA

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95 TONS

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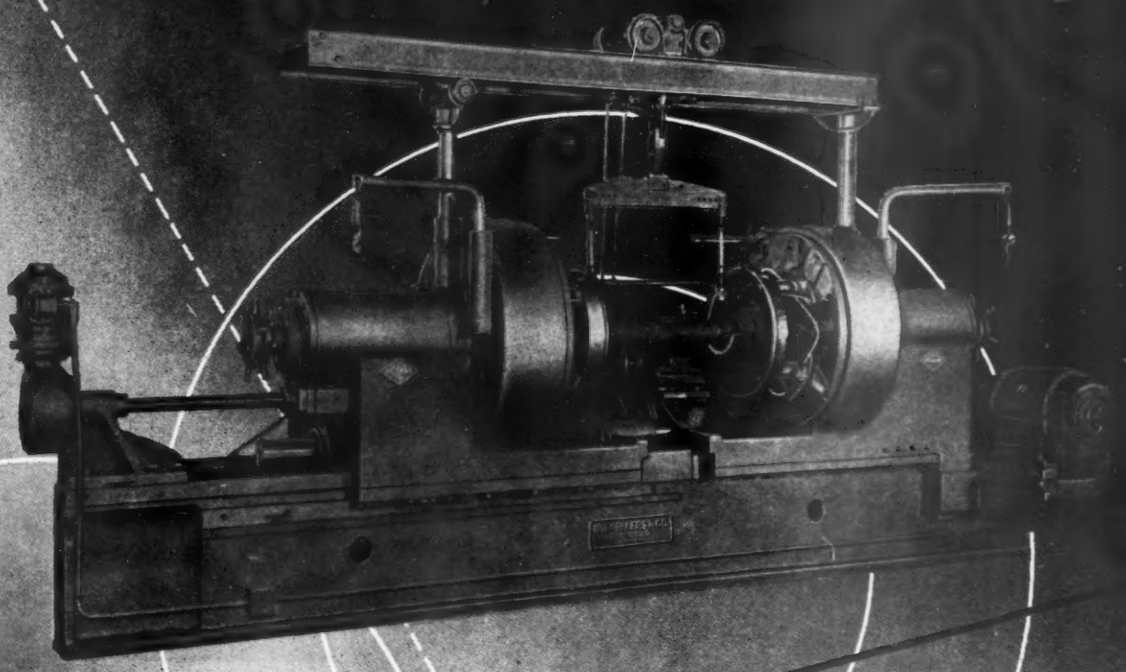
RKS

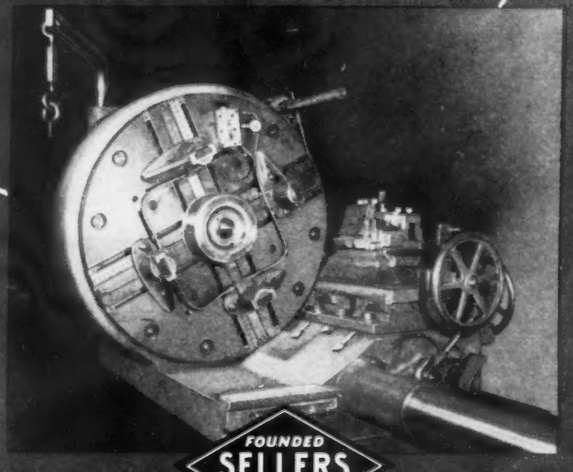
RAILWAY AGE

The Sellers "75"



a new lathe for shaping the future of car wheels...

Hydraulic Driving Dogs—four on each face plate—insure equalization of pressure on wheel rims. Easy to maintain—easy to operate—easy to adjust.



THE SELLERS "75"—the result of 75 years of highly specialized experience in railroad lathe design. The rigidity and speed of this machine insures maximum efficiency for today's and future railroad requirements. Face plate speeds are instantly available—without gear changes—for all types of cutting tools, including carbide.

FOUNDED SELLERS 1848

WILLIAM SELLERS & COMPANY, INCORPORATED • 1600 HAMILTON ST. • PHILA. 30, PA.

MOBILIFT Cuts Time On Every Carload

Today's critical shortage of freight cars is a national problem. One of the most effective ways of solving it is to cut down car loading and unloading time. Mobilift works rapidly and effectively either from the ground level or from the inside of the car. One man and a Mobilift can move a carload of freight in a few hours—do the same job which might take days for a crew of men with handtrucks. Mobilift saves time, labor and space in your plant—whether it's receiving, processing, warehousing, shipping. Start cutting costs with Mobilift.

MOBILIFT *Moves Materials like a Giant!*

VAUGHAN MOTOR COMPANY • 835 S. E. Main Street, Portland 14, Oregon

Sales Offices: 34-48 Steinway St., Long Island City, N. Y. 2430 So. Parkway, Chicago 16, Ill. 107 Walton St., N. W. Atlanta, Ga.

How to control air quality in passenger cars

Many railroads are now achieving satisfactory air quality with *activated carbon* equipment that removes odorous elements which make air stuffy and stale.

No increase in equipment space requirements

Since all ventilation is essentially the dilution of stale and odorous air, fresh air for that purpose can be obtained by purifying already conditioned recirculated air with Dorex *activated carbon* G Panels, instead of drawing in and conditioning large volumes of outdoor air.

Problem: Power, weight and space limitations of cooling, heating and air circulating apparatus have leveled the air design for the average railroad car, with an occupancy up to 80 passengers, to between 2000 and 2400 cubic feet per minute total air delivery, out of which 25% or 500 to 600 c.f.m. is outdoor air make-up. The balance is recirculated. That means that less than 10 c.f.m. (usually nearer 7½ c.f.m.) of fresh air per occupant is provided while standards of good ventilation require a minimum of 20 c.f.m. per passenger to maintain desirable air quality. In dining and tavern cars the ventilation demand may reach 30 c.f.m. per passenger, and the present trend toward universal smoking may make the 20 c.f.m. mandatory.

However, space limitations for equipment have prevented any attempt to meet proper ventilation demand with outdoor air, and control of air quality has been sacrificed in order to obtain control of temperature.

Solution: Dorex Type G Equipment has already proved its effectiveness in converting contaminated air to fresh ventilating air in railroad practice. It has been successfully applied to conditioning units serving railroad coaches, sleepers, lounge cars and dining cars. And Dorex Equipment has been specified in a majority of the new cars of all types currently on order. For example, in a car such as that mentioned above, with 600 c.f.m. outdoor air and 1800 c.f.m. recirculated, 50% or 900 c.f.m. of recirculated air is converted to fresh air and added to the 600 c.f.m. of outdoor air. Thus a total of 1500 c.f.m. of fresh air is provided, which, with an occupancy of 65 persons, is over **20** c.f.m. of fresh, ventilation air per passenger. This percentage can be raised or lowered to meet specific car conditions.

Works like a gas mask

Nothing is added to the air—odors are removed, not disguised.

Used, recirculated air passed through the special gas-adsorbing carbon used in Dorex Equipment emerges purer by far than the outdoor air of inhabited communities. Activated carbon is the most powerful adsorption material known. It has been used for many years in industry for the extraction of chemicals in gaseous and vaporous form from air. Thousands of current applications demonstrate its ability to adsorb the air-borne odor vapors that make air stale and objectionable in railroad cars. Impurities from occupants and their habits and from liquor and food in preparation can be extracted from the air by adsorption.

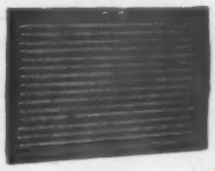
Dorex saves equipment, fuel and power

By purifying air that has already been heated or cooled, the load on heating, cooling and humidifying equipment is reduced or the capacity of the unit expanded.

Thus, railroads have found it economical and feasible to step up passenger comfort by controlling air quality.

Dorex Equipment is easy to install and maintain

The Type G Panels consist of sturdy, light-weight metal frames forming panels, each housing a battery of exposed perforated tubes which contain the granular activated carbon. The face area of the panels does not exceed that of standard air filters, and they are not over 2¾" thick. They can usually be located between the air filter and the coils without imposing any alterations in equipment arrangement or undue resistance to air flow.



DOREX TYPE G Panels

Proof of healthful, satisfactory air quality

Dorex adsorbing equipment has been adopted as standard for Army Hospital cars. After exhaustive tests by the government on all available methods, activated carbon was designated as the only one to be used to control unusual concentration of air-borne odors and impurities generated in confined spaces.

WELL KNOWN TUCO PRODUCTS

Tucolith Composition Flooring

Tuco Treated Canvas **Tuco Rockwool Insulation**

Tuco Trap Doors

Tuco Car Window Screens

Tuco Eclipse Deck Sash Katchets

Tuco-Seal Tape and Fabric

TUCO PRODUCTS CORPORATION

30 Church St., New York 7, N. Y.

122 S. Michigan Ave., Chicago 3, Ill.

2½ Miles of New Streamlined Coaches are here!

NOW! 10,000 More Luxury Seats for NEW York Central Passengers

THIS year, New York Central has added 2½ miles of new, streamlined coaches...with more to come. That makes 10,000 more luxury seats now available daily to speed you on visits to friends...on business trips... or home for the holidays this fall and winter.

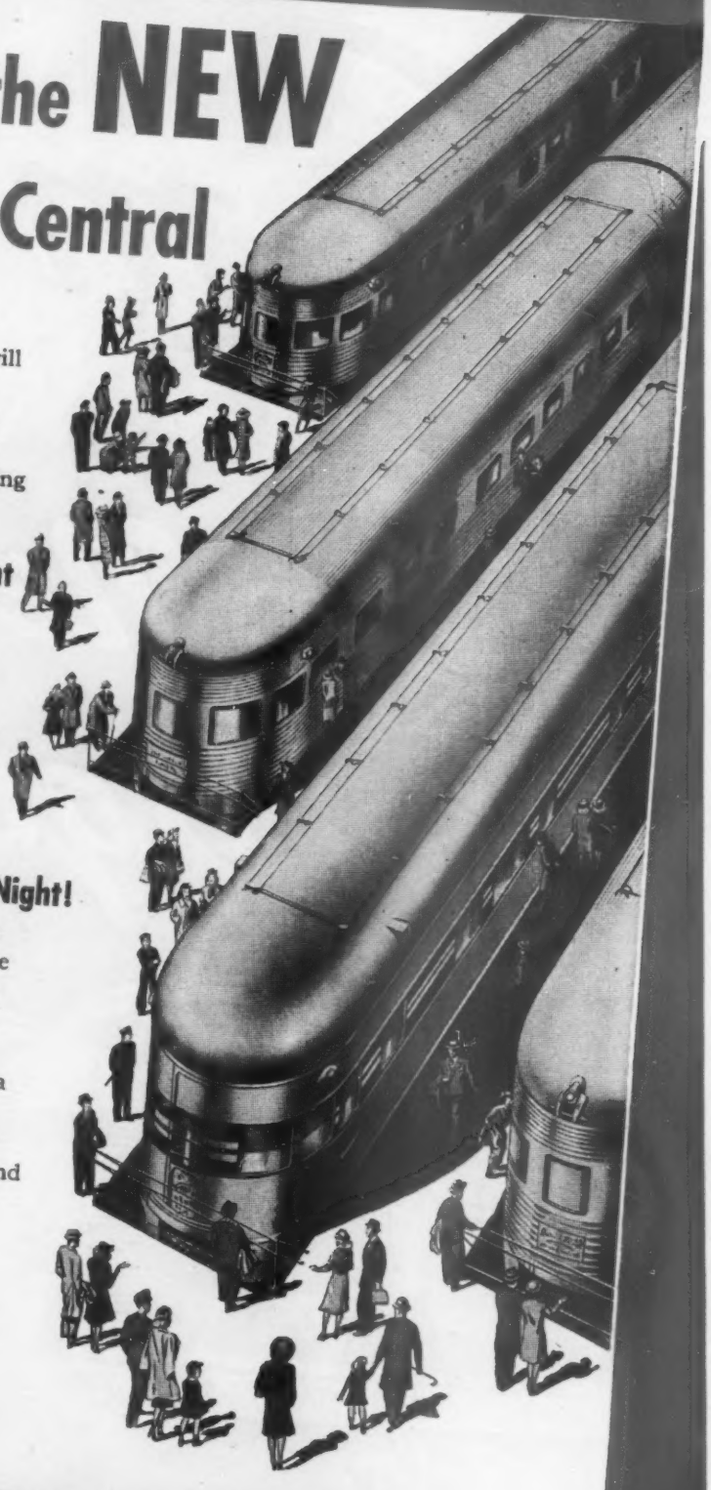
Soon, these new coaches will be made up into complete trains. But meantime, we didn't want you to wait. So, as fast as they were ready, we put them on regular, through trains... adding to our many pre-war, air-conditioned, reclining-seat coaches.

What does this mean to you today? Naturally it can't mean every coach on every Central train is new. But it does mean, on any trip of 100 miles or more, you're pretty sure to find post-war or modern pre-war coaches. And either way, you enjoy today's high in low-cost comfort!

NEW Streamlined Coaches Are Ready! Thousands of New York Central passengers hand-picked the advanced travel features for these new coaches. Now you can enjoy soft, reclining seats...wide-view windows, and smooth-riding, air-conditioned comfort at low coach fares.

New Streamliners and Dreamliners will lead the Parade of new equipment on New York Central in 1947

Spotlighting the NEW in New York Central



1947 is the Year!

Following on the wheels of the miles of new, streamlined coaches will be more miles of all-private-room sleeping cars for a fleet of overnight *Dreamliners*. All part of the $100,000,000 program now spotlighting the *new* in New York Central!

There'll be New Days of Delight

in travelling on New York Central's new Coach Streamliners. Watch America roll past your wide-view window at scenic level. Dine in thrifty, new coffee-shop cars. Lounge in luxurious new Coach Observation Cars. In short, *fare like a King at low coach fares!*

There'll be New Dream Trips by Night!

You'll relax in the privacy of your own completely equipped room. Or enjoy the sociability of Central's smart new Club Cars. You'll feast in new dining cars... some so spacious they need separate kitchen cars. Later, float off to sleep in a feather-soft bed as your *Dreamliner* speeds in any weather over the smooth *Water Level Route*. Arrive refreshed and ready for the day ahead.

NEW YORK CENTRAL SYSTEM

NEW YORK CENTRAL

The Scenic Water Level Route

Coming
6 New
Eagles
TO SERVE THE

in 1947

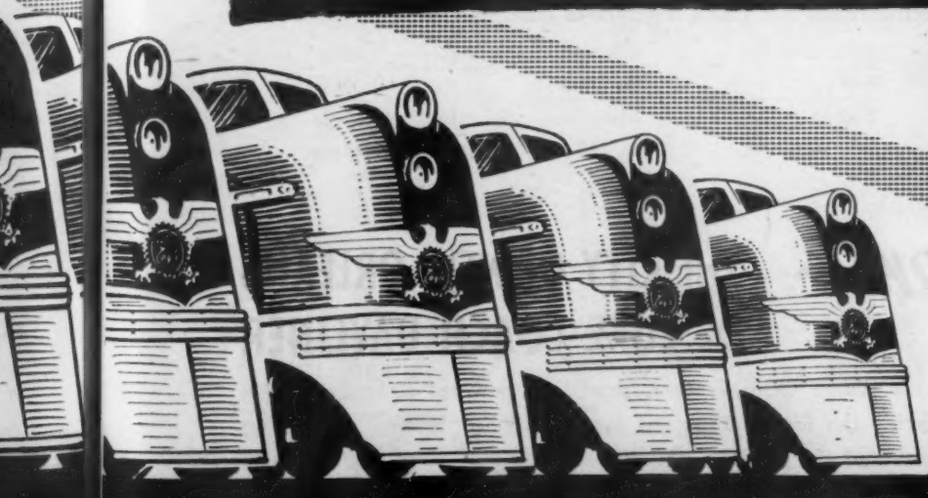
The SUNSHINE *Eagles*

Four complete new Diesel-powered streamliners for the famous Sunshine Route will provide through service daily, on greatly improved schedules, between the St. Louis Gateway and the principal cities of Texas and Arkansas. De luxe, modern coaches, diners, lounges and sleeping cars with sections, bedrooms, drawing rooms and duplex roomettes.

The VALLEY *Eagle* • The NUECES *Eagle*

Two additional Diesel-powered, streamlined coach trains to connect with The Sunshine Eagles will provide through, round-trip service daily between Houston, Corpus Christi and Brownsville, Texas.

Replacing The Sunshine Special, the new Sunshine Eagles will be worthy successors to that popular train, prepared in every respect to continue its 31-year record of travel leadership throughout the Southwest.



MISSOURI PACIFIC LINES

"A SERVICE INSTITUTION"

SOUTHWEST • •

GREAT LAKES to GULF 16½ hours

★ *TODAY—*

THE PANAMA LIMITED FASTER THAN EVER

Now on a 30 minute shorter schedule than ever before between Chicago and New Orleans. De luxe, all-Pullman service with a diesel-electric streamliner that's the equal of America's finest.

5:00 pm	Lv.	. . .	Chicago	. . . Ar.	9:30 am
6:45 pm	Lv.	. . .	St. Louis	. . . Ar.	7:20 am
2:12 am	Ar.	. . .	Memphis	. . . Lv.	11:45 pm
9:30 am	Ar.	. .	New Orleans	. . Lv.	5:00 pm

★ *TOMORROW—*

THE CITY OF NEW ORLEANS DE LUXE COACH DAYLINER

—the Illinois Central's great new diesel-powered streamlined train offering the first morning to evening service between the Great Lakes and the Gulf.

MAIN LINE OF MID-AMERICA

CHICAGO.
SPRINGFIELD.
ST. LOUIS

★ *TODAY—*

NEW DIESEL POWER
TWO FAST DAY TRAINS

The Green Diamond and The Daylight—now both diesel-powered—provide high speed service with daily morning and evening departures from both Chicago and St. Louis.

Daylight	Green Diamond				Green Diamond	Daylight
11:00 am	5:15 pm	Lv.	Chicago	Ar.	2:10 pm	10:10 pm
2:00 pm	8:20 pm	Lv.	Springfield	Lv.	11:00 am	6:55 pm
4:10 pm	10:25 pm	Ar.	St. Louis	Lv.	9:00 am	5:00 pm

ALSO THE NIGHT DIAMOND

Smooth, restful night travel with the finest new, streamlined diesel power. Leave Chicago 11:55 pm, arrive St. Louis 7:15 am. Leave St. Louis 12:30 am; arrive Chicago 7:30 am.

★ *TOMORROW—*

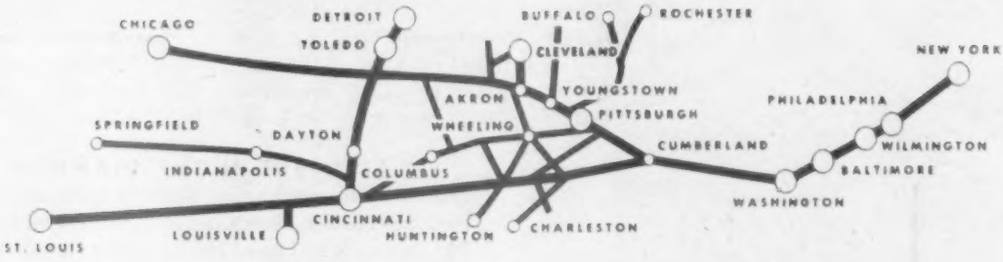
NEW STREAMLINED
DE LUXE SERVICE

New equipment for two beautiful luxury diesel-electric trains each way every day. These additions to the Chicago-St. Louis fleet will make this service the finest in Illinois Central history.

ILLINOIS CENTRAL

THE CAPITOL LIMITED
New York—Washington
Pittsburgh—Chicago
(All-Pullman West of Washington)

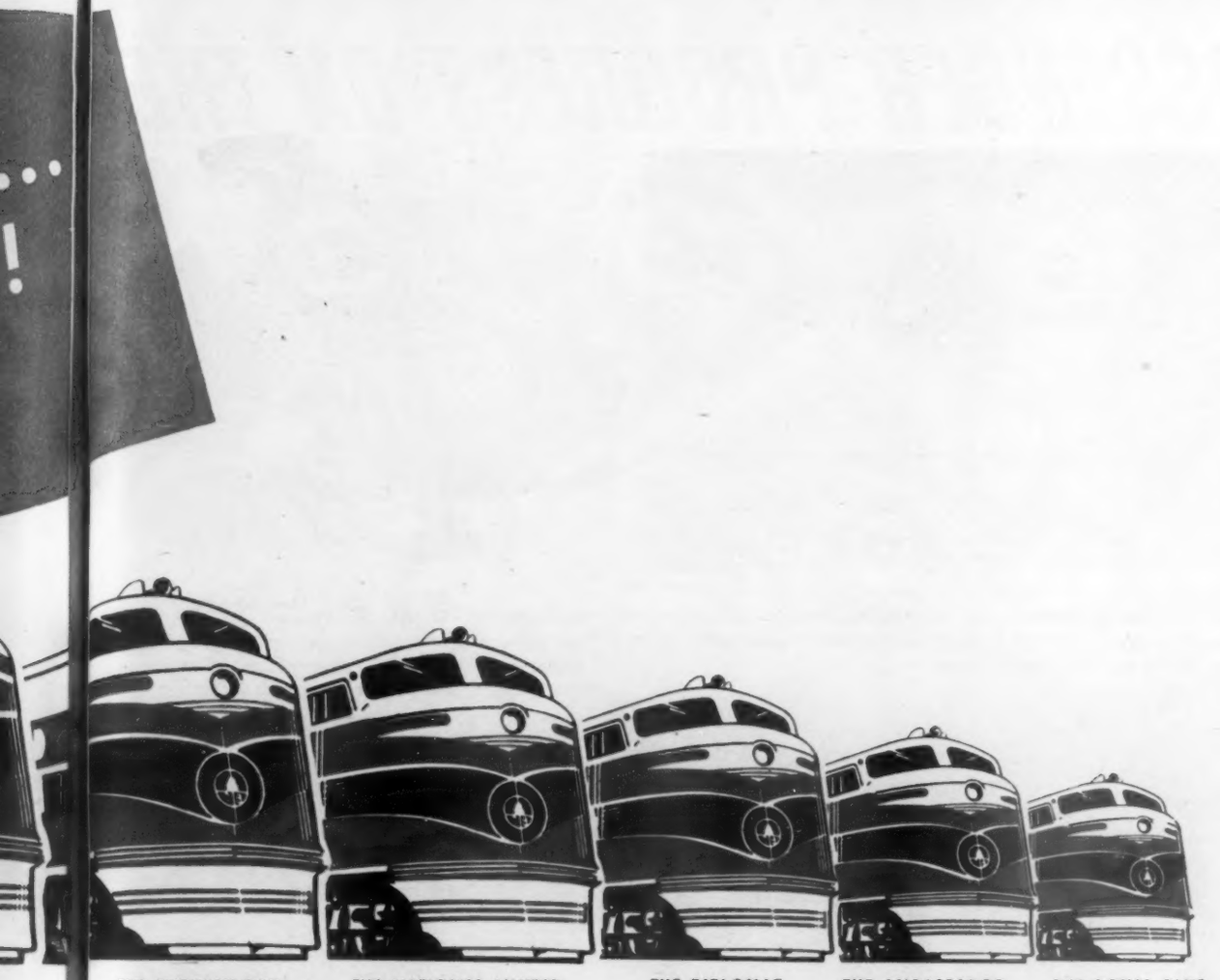
THE COLUMBIAN
New York—Washington
Pittsburgh—Chicago
(All-Coach West of Washington)



LINKING 13 GREAT STATES WITH THE NATION
B&O

The B&O is the Way to Go!

BALTIMORE &



THE SHENANDOAH
New York—Washington
Pittsburgh—Chicago

THE NATIONAL LIMITED
New York—Washington
Cincinnati—Louisville
St. Louis

THE DIPLOMAT
New York—Washington
Cincinnati—Louisville
St. Louis

THE AMBASSADOR
Baltimore—Washington
Toledo—Detroit

THE ROYAL BLUE
New York—Philadelphia
Baltimore—Washington

The comfort of its passengers has always been a first consideration of the Baltimore & Ohio. Through the years, this has been reflected in numerous ways —in air-conditioning, for instance—in the development of more restful coach seats—in the steady addition of de luxe Pullmans and Diesel-Electric locomotives; and has culminated in a *fleet of streamliners* famous throughout America for enjoyable travel.

And there are more to come! Long past the designing stage, whole new trains for the B&O are being rushed to completion—trains that will intrigue the eye with their modern lines and colorful appointments, and set a pace for the new era of travel progress.

But, we're proud to say, some features of the B&O will never change: the old-fashioned courtesy folks appreciate so much, the delicious meals in the dining cars, the skill and cooperation that get you there *on time!*

OHIO RAILROAD

PASSENGER PROGRESS ON THE

AMERICA'S FIRST POSTWAR STREAMLINERS—the PERE MARQUETTES—began service last August 10 between Detroit, Lansing, and Grand Rapids—offering a trainload of luxury at regular coach fares.

"PAY-AS-YOU-GO" SERVICE inaugurated on the Pere Marquette last August 10 cut out the need for waiting in ticket lines. Passengers make reservations by phone and pay on trains.

"NO TIPPING" SERVICE introduced on the Pere Marquette Railway last June 10 won a rousing reception from dining car patrons.

DINING-CAR WAITRESSES were introduced for the first time in the Middle West on March 1—marking another Pere Marquette innovation.

Let's Get the Black Market's Hand Out of the Traveler's Pocket!

The underground sale of sleeping car space is a national scandal. The railroads cannot escape responsibility. The C&O Lines offer a solution that will kill the racket—if other roads will join.

THIS C & O LINES' PLEA—"Let's Get the Black Market's Hand Out of the Traveler's Pocket!" was published last April. It was followed by a new sleeping car tariff which resulted in releasing more space for anxious travelers.

CHESAPEAKE & OHIO LINES: 1946

A Hog Can Cross America Without Changing Trains—But YOU Can't!

The Chesapeake & Ohio and the Nickel Plate Road again propose to give humans a break!

It's hard to believe, but it's true.

If you want to ship a hog from coast to coast, he can make the entire trip without changing cars. You can't. It is impossible for you to pass through Chicago, St. Louis, or New Orleans without breaking your trip!

There is an invisible barrier down the middle of the United States which you cannot cross without incurred misery, lost time, and trouble.

500,000 Victims in 1946!

If you want to board a sleeper on one coast and ride through to the other, you must make double Pullman reservations, wait and transfer your baggage, often change stations, and wait around for connections.

It's the same sad story if you make a relatively short trip. You can't cross that mysterious line! To go from Fort Wayne to Milwaukee or from Cleveland to Des Moines, you must also stop and change trains.

Last year alone, more than 500,000 people were forced to make annoying, time-wasting stopovers at the phantom Chinese wall which splits America in half!

End the Secrecy!

Why should travel be less convenient for people than it is for pigs? Why should Americans be denied the benefits of through train service? No one has yet been able to explain it.

Canada has this service . . . with a choice of two routes. Canada isn't split down the middle. Why should we be? No reasonable answer has yet been given. Passengers still have to step off at Chicago, St. Louis, and New Orleans—although they can ride right through other important rail centers.

It's time to pry the lid off this mystery. It's time for action to end this inconvenience to the public . . . NOW!

Many railroads could cooperate to provide this needed through service. To date, the Chesapeake & Ohio and the Nickel Plate ALONE have made a public offer to do so.

How about it?

One more we would like to go on record with this specific proposal:

The Chesapeake & Ohio, whose western passenger terminus is Cincinnati, stands ready now to join with any combination of other railroads to set up connecting transcontinental and intermediate service through Chicago and St. Louis, on practical schedules and routes.

The Nickel Plate Road, which runs to Chicago and St. Louis, also stands ready now to join with any combination of roads to set up the same kind of connecting service through these two cities.

Through railroad service can't be blocked forever. The public wants it. It's bound to come. Again, we invite the support of the public, of railroad people and railroad investors—for this vitally needed improvement in rail transportation!

Chesapeake & Ohio Railway · Nickel Plate Road

SUPER-MODERN STATION, like this one dedicated last June 26 at Prince, W. Va., is symbolic of Chesapeake & Ohio's long-term program of passenger station improvement.

THROUGH COAST-TO-COAST SLEEPING CAR SERVICE followed closely the publication last March of this famous C & O Lines' advertisement—"A Hog Can Cross the Country Without Changing Trains —But YOU Can't!"

FAMOUS "SLEEPY HOLLOW" SEATS, used for the first time August 10 on the PERE MARQUETTES, ushered in new comfort for coach passengers.

AND—A PEEK AT '47! The Chesapeake & Ohio's new streamlined daytime trains, which will go in service in 1947, will be the most revolutionary that ever hit the rails.

Among the many new features will be a rolling moving picture theatre, telephone service for passengers en route, news tickers, vista-dome observation cars, special facilities for the care of children, art and industrial exhibits, library service!

These trains will be powered by newly designed coal-burning steam turbine electric locomotives now being built.

Moreover, bids have been received on new equipment to replace *all* main line passenger equipment on all the C & O Lines.

That, we submit, is progress in the interest of rail travelers!

CHESAPEAKE AND OHIO LINES

Terminal Tower, Cleveland 1, Ohio

CHESAPEAKE AND OHIO RAILWAY • NICKEL PLATE ROAD • PERE MARQUETTE RAILWAY

Coming . . . . PASSENGER PROGRESS PLUS!

BURLINGTON'S NEW TWIN *Zephyrs*

FEATURING VISTA-DOME CARS

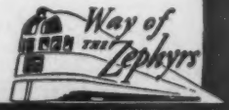
Between CHICAGO and ST. PAUL-MINNEAPOLIS

● When the Burlington introduced America's first VISTA-DOME car in July, 1945, this promise was made—"if the public likes the VISTA-DOME idea—the Burlington plans a fleet of these cars for the future."

It didn't take long to find out that the public *did* like the idea of riding in a "penthouse on wheels." Not since the Burlington introduced America's first diesel-powered, streamlined train, back in 1934, have we seen such immediate and widespread enthusiasm.

And so—America will enjoy another "first" in modern transportation—two new diesel-powered, stainless steel Zephyrs, each of which will have five VISTA-DOME cars. These new trains are being built now. In design, construction and appointments, they will symbolize "the last word" in modernity. In terms of spaciousness, conveniences and luxurious comfort, they will surpass even the present Twin Zephyrs which they will replace in regular service between Chicago and St. Paul-Minneapolis.

So look forward to an utterly new travel thrill—to the day when you can enjoy a penthouse view as you glide along Burlington's beautiful upper Mississippi River route "where Nature smiles 300 miles."



BURLINGTON LINES

Everywhere West

CHICAGO, BURLINGTON & QUINCY RAILROAD • COLORADO and SOUTHERN RAILWAY
FORT WORTH and DENVER CITY RAILWAY • THE WICHITA VALLEY RAILWAY • BURLINGTON-ROCK ISLAND RAILROAD

AN ESSENTIAL LINK IN TRANSCONTINENTAL TRANSPORTATION

Burlington Route

New Power
New Schedules
for Santa Fe's Famous Streamlined Fleet

New power, in the form of giant 6000 horsepower passenger Diesel locomotives, provides a finer standard of operations for Santa Fe's popular *Super Chief, Chief,* and *El Capitan.*

This modern power pulling Santa Fe's gleaming streamliners maintains fast schedules and gives passengers a smooth comfortable ride.

New schedules, too, give Santa Fe travelers the only daily 39¾ hour service between Chicago and California.

The streamlined *Super Chief* (standard sleeping cars only) and the all-chair-car streamlined *El Capitan* now run on alternate days of the month between Chicago and Los Angeles.

Santa Fe's popular streamlined *Chief* (standard sleeping cars only) and our great fleet of daily trains are now back on swift pre-war schedules providing a variety of service for travel to, from and in the West and Southwest.

SOON THERE WILL BE EVEN FINER TRAINS ON THE SANTA FE. WATCH FOR AN EARLY ANNOUNCEMENT.

General Passenger Traffic Manager
Santa Fe System Lines, Chicago, Illinois

Santa Fe

Two of America's Newest and Finest Postwar Streamliners for Daytime Travel

Powered by the latest type, high-speed passenger Diesel locomotives. These 2,000 h.p. Diesel units were specially designed and built for the CHICAGO-liners by the Electro-Motive Div., General Motors, La Grange, Ill.

C & E I CHICAGO-liners

•

THE MEADOWLARK

Now in regular daily service between Chicago and Southern Illinois.

Featuring:

- Invitingly spacious coaches with deep-cushioned Sleepy Hollow reclining chairs . . . sociable smoking lounges . . . roomy luggage compartments . . . individual lens lighting. Following names native to Illinois have been chosen for these cars: *Hubbard Trail; Horse-Shoe Trail; Egyptian Trail.*
- A hospitable lounge-grill car—*"Sparhawk Inn."* Circular counter facilitates fast and efficient service. Congenial lounge arrangement provides roomy passageway.
- Thermostatically controlled air conditioning throughout the entire train.

Resplendent in the use of modern color dynamics—the interiors of these new trains are finished in the finest taste . . . charming color combinations conducive to rest and relaxation. Descriptive photo murals and sparkling mirrors further enhance the beauty of these spacious interiors.

Both these new trains introduce a new trend in color and design motif taken from the scenic countryside served by the C & E I.

C&EI — The CHICAGO Line

•

THE WHIPPOORWILL

Now in regular daily service between Chicago and Evansville, Ind.

Featuring:

- Spacious coaches with deep-cushioned Sleepy Hollow reclining chairs . . . sociable smoking lounges . . . roomy luggage compartments . . . individual lens lighting. In character with their unique beauty, these cars bear these distinctive names: *Vigo Trail; Vincennes Trail; Vanderburg Trail; Vermilion Trail;* and *Turkey Run.*
- Roomy diner, with diagonal seating—"Shakamak Inn."
- Luxurious observation parlor car—"Chicagoland."
- Thermostatically controlled air conditioning throughout the entire train.

"Sparhawk Inn" is the name of this unique, lounge-grill car. Passengers aboard the MEADOWLARK enjoy tempting "tid-bits" prepared by an experienced chef.

Famous Sleepy Hollow recliners are regular equipment on both new CHICAGO-liners . . . provide extra leg room . . . lounging freedom.

"Shakamak Inn" on the WHIPPOORWILL is America's most modern diner—featuring roomier, diagonal seating . . . the ultimate in railroad dining comfort.

CHICAGO & EASTERN ILLINOIS railroad

The Chicago Line

"The biggest little railroad in the country"

The only railroad between Washington D. C., and Richmond Va.

JOHN B. MORDECAI
Traffic Manager

RICHMOND, FREDERICKSBURG AND POTOMAC RAILROAD

RICHMOND 20, VIRGINIA

NEW Train Horizons

Sometime in 1947 you will see them—five flashing new streamliners, all members of "North Western's" famous "400" Fleet of Diesel-powered beauties. And what a thrill it will be to watch them as they glide smoothly over gleaming rails to become a part of the train horizons of tomorrow!

It is too early to give the exact dates of the arrival of the new "400s." Be assured, however, that they will reflect the newest and finest in train design and construction, all worthy of the patrons they are to serve—their Majesties, America's Citizens.

The new trains will include a streamlined

NORTH WESTERN LIMITED

overnight between Chicago and St. Paul-Minneapolis

Also daytime "400s" between

Chicago and Omaha-Sioux City
Chicago and Rochester-Mankato
Chicago and Ashland-Watersmeet

The spirit of progress that has imbued "North Western" ever since 1848 is in evidence today as never before. New comforts—greater safety—added luxuries—unlooked for conveniences—faster schedules ..."North Western" will continue to provide them in unstinted measure. Watch "North Western" in '47!

CHICAGO and NORTH WESTERN SYSTEM

PIONEER RAILROAD OF CHICAGO AND THE WEST

the *New* Empire Builder

custom-built for pleasant, faster travel

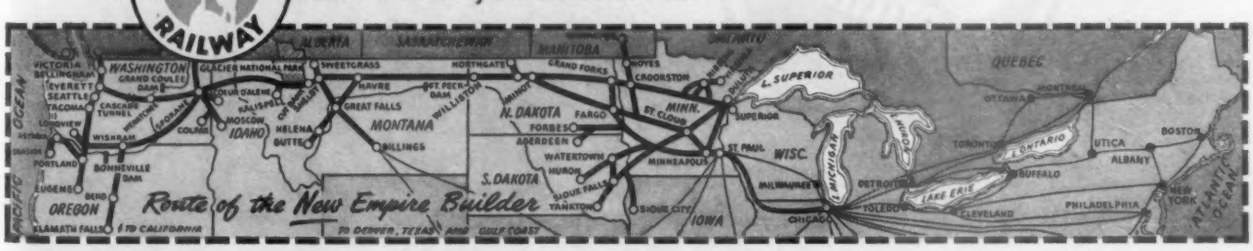
A new generation of a long-distinguished fleet of transcontinental trains—Great Northern's *New* EMPIRE BUILDERS. The *first* modern, sleeping car-coach trains built since the war, the *New* EMPIRE BUILDERS inaugurate the *first* streamliner service between Chicago and the Pacific Northwest on a daily 45-hour schedule. These sleek, colorful, diesel-drawn trains are custom-built for comfortable, refreshing travel. New style coaches . . . duplex roomettes . . . spacious bedrooms . . . cheerful lounges . . . gay coffee shops . . . and charming dining cars with Great Northern's famous food service. The *New* EMPIRE BUILDERS—modern trains designed for modern travelers.

New design duplex roomettes . . . ideal for the passenger who desires complete privacy and comfort.

New style Day-Nite coaches . . . more room for each passenger, more comfort and convenience.

GREAT NORTHERN RAILWAY

Serves the Best of the Great Northwest



. . . but wait 'til you see

the **NEW**

Southern Belle

Coming About Mid-'47
with the right combination
of Smartness, Comfort, Service
and Speed for the Utmost
in Travel Enjoyment
between
KANSAS CITY and NEW ORLEANS

KANSAS CITY SOUTHERN *Lines*

Now in the making...

six transcontinental Speedliners

1947 will be a peak year for the introduction of new cars, motive power and equipment on The Milwaukee Road. Headlining this great parade of progress will be the new OLYMPIAN HIAWATHAS to be placed in service on a super-speed schedule between Chicago-Milwaukee-Twin Cities-Butte-Spokane-Seattle-Tacoma. New equipment will also be assigned to other leading trains.

The six complete OLYMPIAN HIAWATHA units will comprise seventy-two cars and six 6,000 horsepower diesel-electric locomotives. The entire train will be packed with fresh ideas and conveniences for coach and sleeping car passengers alike.

Work on the advanced-type trucks and car bodies is already nearing completion. The greater part of the equipment, including the Tip Top Grill cars and the unique dining cars, will come from The Milwaukee Road's modern manufacturing plant at Milwaukee, Wisconsin—the same shops that produced the series of famous daytime HIAWATHAS. Construction of the luxurious all-room sleeping cars, including the distinctive Sky-top Lounge, is steadily progressing at the Pullman shops.

Through the years ahead, The Milwaukee Road will maintain its position as a leading contributor to progress in rail transportation.

THE MILWAUKEE ROAD

Only railroad all the way between Chicago and the Pacific north coast

2 NEW LUXURY COACH STREAMLINERS

The Humming Bird

BETWEEN CINCINNATI AND NEW ORLEANS

The Georgian

BETWEEN ST. LOUIS AND ATLANTA

THE LAST WORD IN TRAVEL COMFORT

The Humming Bird and *The* Georgian are here! The coach trains you've been dreaming of.

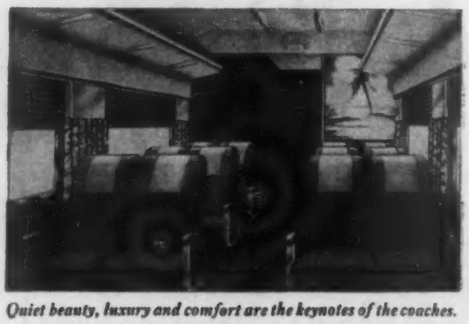
SPEED that takes you to destination quickly.

SAFETY for which railroad travel is famed.

COMFORT that can be found only in soft, adjustable seats, restful color schemes, subdued fluorescent lighting, wide vision windows, roller bearings, well equipped washrooms, a public address system and trained attendants.

SOCIABILITY that permeates the luxurious tavern-lounge cars where one may read, write letters, chat in comfort, enjoy a cool drink from the bar, or just relax and watch the scenery.

DELICIOUS MEALS in the smart dining cars at economical prices. RESERVED SEATS guarantee full accommodations to destination. LOW COACH FARES, the same as are charged for coach travel on ordinary trains, bring you all the glories of *The Humming Bird* and *The* Georgian at extremely low cost.



Quiet beauty, luxury and comfort are the keynotes of the coaches.

Tasty food expertly served in delightful surroundings.

The lounge section of the tavern-lounge car achieves a club-like atmosphere.

Fast and dependable service

L&N

Modern, Safe, Economical and Comfortable

LOUISVILLE & NASHVILLE RAILROAD

The Old Reliable... Yesterday... Today... Tomorrow

The "Board is Clear" for the Trains of Tomorrow

. . . on The Route of Phoebe Snow!

During 1947, new Diesel passenger locomotives, modern luxury coaches, sleeping cars, dining cars and tavern-lounge cars will become standard equipment on the Lackawanna.

An extensive program of modernization, covering both equipment and service, and costing in excess of ten million dollars, will provide passengers on Lackawanna through trains as well as those using through-line connections between New York, Cleveland and Chicago, with the latest refinements of modern travel.

A new train to be known as "The Phoebe Snow," composed of streamlined equipment and powered by high-speed Diesel locomotives, will provide daytime service to and from Buffalo and New York, replacing one of America's oldest named train . . . the famous Lackawanna Limited!

With the delivery of the new Diesel passenger locomotives in December of this year, the service and schedules of several Lackawanna through trains will be improved *immediately*, preliminary to complete modernization next year.

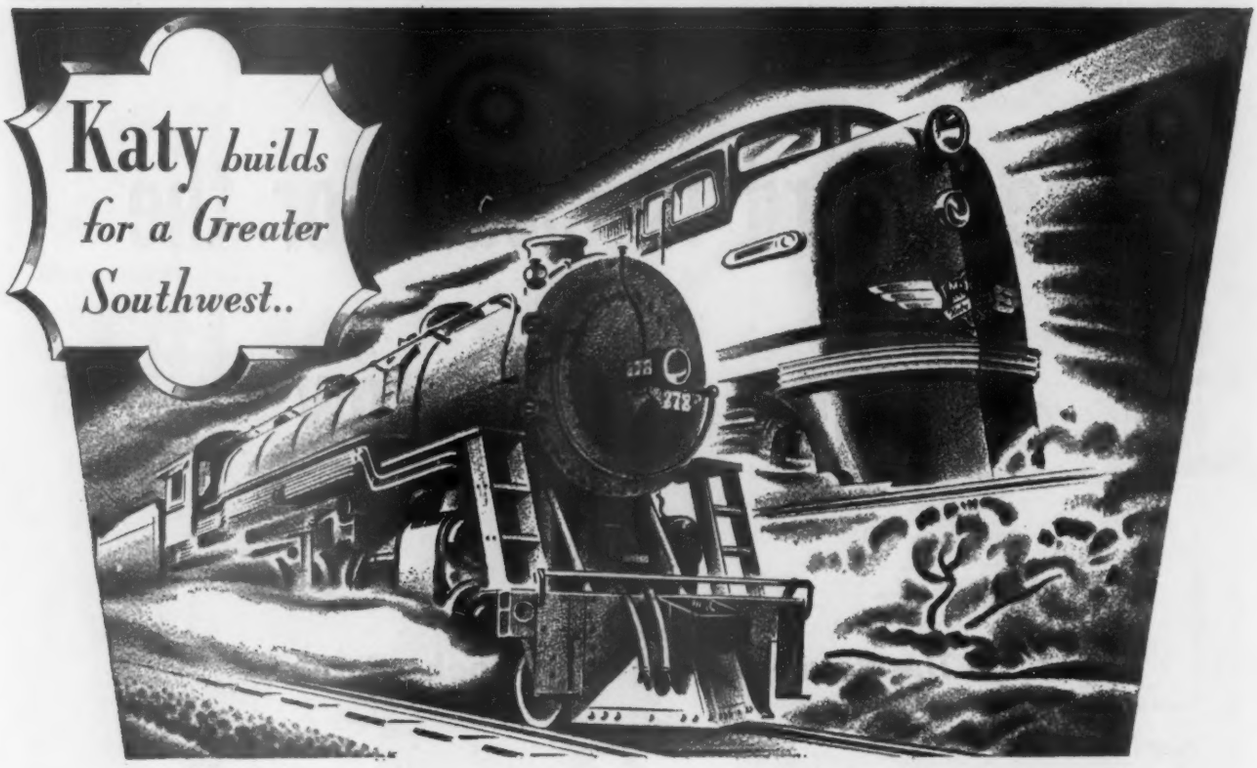
The new streamlined, air conditioned passenger equipment now on order, together with the fleet of modernized coaches recently placed in service, will insure comfortable, luxurious and fast service on *all* Lackawanna through trains.

. . .

The traditional high standards which have characterized Lackawanna service over the years will be proudly upheld in our "Trains of Tomorrow."

Lackawanna Railroad

THE ROUTE OF PHOEBE SNOW



The Streamliners are Coming!

Smooth-rolling speed is coming your way. Katy's new streamliner will soon be roaring across the nation on truly high-speed schedules. And what luxurious accommodations will be yours—amazing traveling comforts far beyond your fondest hopes. Yes, Katy's determined program to afford the finest, the fastest in modern transportation is moving full speed ahead. Schedules between Texas and St. Louis are slashed . . . through service to and from the Great Southwest and the Metropolitan East is available . . . modern Diesels now move Katy Freight at passenger train speeds . . . and radio-controlled Katy trains will soon leave the experimental stage.

Yes, Katy is keeping the promise . . . the promise to provide the ultimate in transportation services and facilities. Katy is building for business and pleasure . . . building, too, for those far-sighted men and women of industry who will find the Katy-served Southwest the land of greater opportunity. So when you ship or travel to and from the Southwest, Okay Katy.

M·K·T
Katy Lines

MISSOURI-KANSAS-TEXAS RAILROAD SYSTEM

Fast COMFORTABLE STREAMLINED TRAVEL BETWEEN THE WEST AND THE VIRGINIA SEASHORE

Via THE *Pocahontas*

and THE *Powhatan Arrow*

From the world port of Norfolk on the Atlantic Coast, Norfolk and Western streamliners speed through scenic highlands, fertile valleys and rich industrial centers of Virginia, West Virginia and Ohio to Cincinnati and Columbus.

Modern luxury coaches with deep cushioned seats, attractive, friendly lounges, unsurpassed dining service ... and many other accommodations and conveniences add to the comfort and safety that makes traveling on the N. & W. an enjoyable experience.

Interline ticket agents and travel-wise passengers demand speed, comfort, dependability . . . and economy. The Norfolk and Western takes pride in offering "The Pocahontas", a fast overnighter — and "The Powhatan Arrow", the newest, all-coach, reserved-seat daylighter. Both trains make excellent West, North and South connections. Both offer travel luxury and convenience at its best — at no extra fare.

NORFOLK AND WESTERN *Railway*

America has long set the railway standards of the world and these will be pushed to new peaks in the years just ahead. The early Monon described and illustrated so humanly on this page by two world-famous Hoosiers will become tomorrow's modern Monon doing its part to advance railway leadership in travel within the area which it serves.

John O. Barriger
President

THE TRAVELER who wishes to see Indiana must go riding on the Monon. It was the first iron trail to be pushed from one end of the state to the other. That is why so many worth-while things may be seen from the car window.

The Monon pathway is by open prairies and deep woodland, across the Kankakee and Tippecanoe and Wabash up to the gates of important cities, and through the quiet shades of college towns. It links the Ohio with the Grand Calumet and lays a friendly hand on factories, fields, and quarries through an important chain of counties.

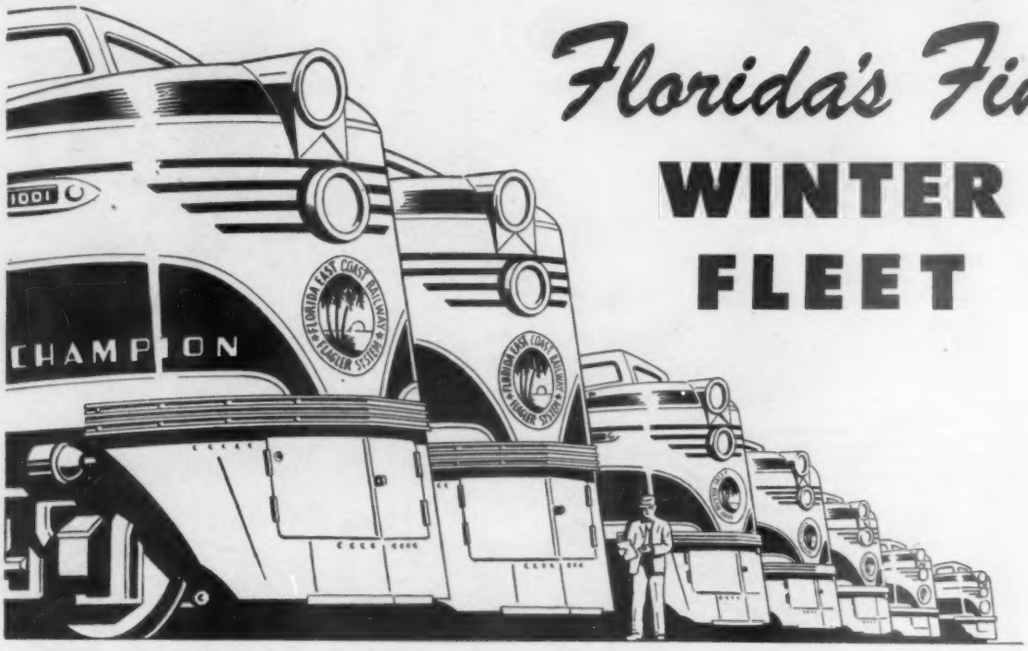
The name "Monon" is Indian. It means "swift-running." The railway began to make history some ninety years ago. My first dream, as a Hoosier boy, was to ride away on the Monon toward the Heaven-piercing spires of LaFayette or Michigan City. The Monon is "catty-cornered" to the whole State of Indiana, and all its trains are "Hoosiers."

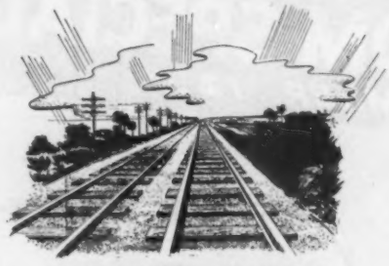
George Ade

MONON

CHICAGO, INDIANAPOLIS AND LOUISVILLE RAILWAY COMPANY

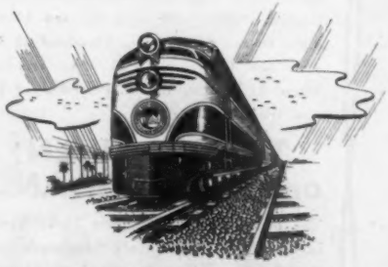
Coming *Florida's Finest* WINTER FLEET





DOUBLE TRACK

Florida East Coast Railway has important speed and safety advantages as Florida's ONLY double track route.



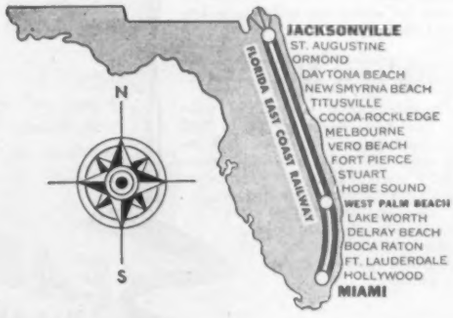
DIESEL POWER

All present Florida East Coast Railway passenger trains are Diesel-powered. Majority of winter fleet will be so equipped.

This winter, as usual, Florida's finest fleet of through winter trains will speed over the smooth-riding, double-tracked Florida East Coast Railway, serving all the popular cities and resorts in this rapidly growing territory.

From New York and the East, SIX fine daily trains will be available through to Miami beginning December 12th—the all-coach "Champion" and "Vacationer", the all-Pullman "Florida Special" and "Miamian", New York and Washington sections of the "Havana Special".

From Chicago and the Mid-West, Florida East Coast Railway offers the only through coach streamliners—"Dixie Flagler", "City of Miami" and "South Wind". Beginning December 12th, it will add the fast, one-night-out through coach and Pullman "Dixieland", "Sunchaser" and "Florida Arrow". Present through sleeper between Kansas City and Miami via the "Kansas City-Florida Special" will continue all winter.



FLORIDA EAST COAST RAILWAY

A Florida Industry and Institution

To FLORIDA
AMERICA'S WINTER PLAYGROUND

The ORANGE BLOSSOM SPECIAL
RESUMES SERVICE DECEMBER 12th

The ADVANCE SILVER METEOR

New Diesel-powered, streamlined train will leave New York, December 12, at 10:05 a.m., arriving West Palm Beach 10:00 a.m., Miami 11:40 a.m., Tampa 8:50 a.m., St. Petersburg 10:35 a.m., the following day . . . Coaches (all seats reserved- at no extra charge), observation-lounge, tavern, dining and sleeping cars . . . New streamlined coaches will be added on delivery in December and January.

The SILVER METEOR

Popular Diesel-powered, streamlined train will leave New York, December 12, at 2:35 p.m.. arriving Savannah 7:00 a.m., Jacksonville 9:30 a.m., West Palm Beach 3:30 p.m., Miami 5:20 p.m., Tampa 2:05 p.m., St. Petersburg 4:00 p.m., the following day . . . Coaches (all seats reserved at no extra charge), observation-lounge, tavern, dining and sleeping cars . . . New streamlined coaches will be added on delivery.

On December 12th, after an enforced war-time absence of several years, the *Orange Blossom Special*, famous All-Pullman luxury train to the increasingly popular resorts on both coasts of Florida, will leave New York at 1:35 p.m. on the first of its daily trips during the 1946-47 winter season. It will arrive Miami 4:10 p.m. and St. Petersburg 2:30 p.m. the following day. Equally convenient arrivals are afforded at other Florida resorts. Dining and lounge cars feature the train along with Pullmans providing sections, bedrooms, single and en suite, compartments and drawing rooms.

SEABOARD
AIR LINE RAILROAD

The FLORIDA SUNBEAM

Resumes its Pullman and coach service to the Florida resorts from Chicago and Detroit December 6, from Cleveland and Cincinnati December 7. It will leave Chicago 11:45 p.m., Detroit 11:40 p.m., Cleveland 12:40 a.m. and Cincinnati 8:15 a.m., arriving Miami 11:59 a.m. and St. Petersburg 9:59 a.m. the following day.

The SUN QUEEN and The PALMLAND

The *Sun Queen* between New York, Washington, Richmond, Norfolk-Portsmouth and the Carolinas, Georgia and both Florida coasts and the *Palmland* between New York, Washington, Richmond and the Carolinas, Georgia and Florida's east coast, will continue their approximate present schedules.

SEABOARD RAILROAD

TRAVEL SMART···TRAVEL SEABOARD

SEABOARD RAILROAD

New Travel Luxury!

Super streamliners...are coming your way...on the Frisco! First of the fleet will be the Meteor "Flash" and the Texas Special...serving Oklahoma, Texas and the Southwest! Speedy... modern . . . and luxurious. More improvements, costing millions, are on the way, too! For the best in transportation . . . continue to look to Frisco!

FAST
FRIENDLY
FRISCO

Modern Travel At Its Best!

FRISCO
LINES
ST. LOUIS-SAN FRANCISCO RY.

again!

THE LARGEST FLEETS OF TRAINS FOR THE FLORIDA WINTER SEASON • 1946-1947

Eastern Trains

3 **All-Pullman Trains**

FLORIDA SPECIAL (East Coast) — New York and Miami

FLORIDA SPECIAL (West Coast) — New York, Central and West Coast Florida Resorts

MIAMIAN — New York and Miami

3 **All-Coach Reserved-Seat Trains**

CHAMPION (East Coast) — New York and Miami

CHAMPION (West Coast) — New York, Central and West Coast Florida Resorts

VACATIONER — New York and Miami

3 **Pullman and Coach Trains**

HAVANA SPECIAL — New York, Carolinas, Georgia and All Florida

EVERGLADES — New York, Carolinas, Savannah and Jacksonville

PALMETTO — New York, Carolinas and Georgia

9 **Daily Through Trains:** All Diesel powered south of Richmond, Va., and all operated over the double-track route between the East and Florida.

Western Trains

3 **All-Coach Reserved-Seat Trains**

Each operates every 3rd day in rotation

CITY OF MIAMI — Chicago and Miami

DIXIE FLAGLER — Chicago and Miami

SOUTH WIND — Chicago and Miami

3 **New One-Night-Out Sleeper Coach Trains**

Each operates every 3rd day in rotation

DIXIELAND — Chicago and Miami

SUNCHASER — Chicago and Miami

FLORIDA ARROW — Chicago and Miami

5 **Daily Pullman and Coach Trains**

DIXIE FLYER — Chicago and Florida

DIXIE LIMITED — Chicago and Florida

SEMINOLE — Chicago and Florida

SOUTHLAND — Chicago and Both Coasts of Florida

FLAMINGO — Cincinnati and Florida

11 **Through trains** providing service to Florida through every western gateway to the Southeast. Travelers with round-trip tickets may go one route with choice of two separate routes returning.

Florida Special all-Pullman train southbound near Callahan, Florida — note the newly graded right-of-way

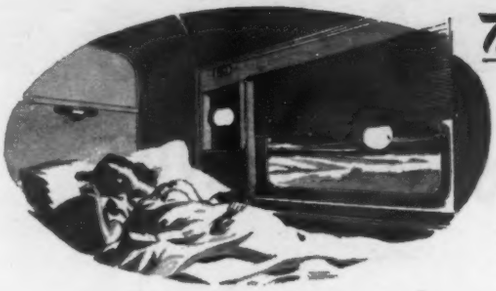
• The *only* double track route between the East and Florida

ATLANTIC COAST LINE RAILROAD

New Trains for a New Age—Modern sleeping cars and coaches, dining cars and lounges, designed with a fresh conception of privacy, luxury and comfort, are now on order for the future travel pleasure of our patrons. These exquisite new cars will be used to re-equip popular trains of the Coast Line's famous fleet operating between the East and the East Coast and West Coast of Florida, providing luxury service in the modern manner.

Monarchs OF THE RAILS!

The new Texas and Pacific "EAGLES"

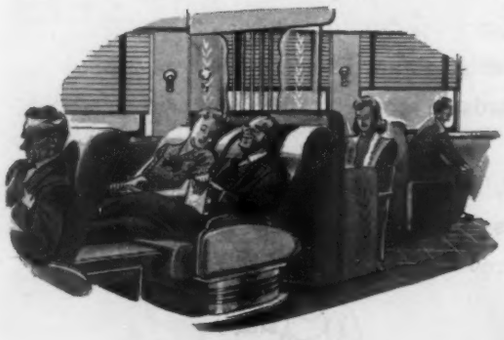


Providing the swiftest railroad schedules in the Southwest, the new Texas and Pacific Eagles will flash down the rails, powered by mammoth 4,000 horsepower Diesel-electric engines. On many sections of the road, running time will be reduced as much as 25 per cent.

On these luxurious streamliners, chair cars, sleepers and diners will be of aluminum alloy, and roll stabilizers on all cars will eliminate swaying on curves. New, improved shock absorbers will give smoother riding and electro-pneumatic brakes will provide greater braking efficiency and increased safety.

Fog-proofed, safety glass windows will give full vision at all times and all windows will be tinted to remove glare. Fluorescent lights and soft, pastel colors throughout will add to the comfort and beauty of the Eagles.

Monarchs of the rails, the Texas and Pacific Eagles will be placed in service during the first half of the new year . . . to begin a new era in safe, modern, swift transportation.



- New sleeping cars will provide the utmost in privacy and comfort, with roomettes, bedrooms, double bedrooms and drawing rooms.
- The coach traveler will ride in smartly styled chair cars, beautifully designed, with correctly postured, reclining seats. Each car will have its own lounge and will be radio equipped.
- Lounge cars have been lavishly designed with spacious windows, smart, comfortable seats, fountains and snack bars.
- Dining cars will offer modern-as-the-minute seating and serving arrangements and will be furnished with superb silverware, china and linens.

TEXAS AND PACIFIC RAILWAY

THE TEXAS AND PACIFIC RAILWAY

1846 . . . 1946

On April 21, 1846, the Delaware, Lehigh, Schuylkill and Susquehanna Railroad—later renamed Lehigh Valley Railroad—was incorporated in the State of Pennsylvania. Extensions of its original 45-mile line between Easton and Mauch Chunk, Pa., today comprise the strategic Lehigh Valley route between the Great Lakes and the Sea.

ENTERING A SECOND CENTURY OF SERVICE!

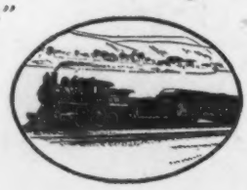
Throughout a hundred years of change, growth and progress, a century including the entire cavalcade of motive power from wood-burning locomotives to today's Diesel and steam giants of the rails, Lehigh Valley Railroad has kept faith with its founders in providing high standards of service to the traveling and shipping public.

Passing the milestone of its first Centennial, Lehigh Valley welcomes the opportunities which lie ahead in contributing its full share of efficient *railroad transportation* essential to the America of tomorrow.

PRESIDENT

The First "Black Diamond Express"

This year marks another Lehigh Valley anniversary—the Fiftieth Birthday of The Black Diamond, one of America's most famous daylight trains, inaugurated May 18, 1896.



LEHIGH VALLEY RAILROAD

THE ROUTE OF THE BLACK DIAMOND

28 Fast Wabash Trains Daily Between...

DETROIT AND CHICAGO — CHICAGO AND ST. LOUIS
ST. LOUIS AND KANSAS CITY — ST. LOUIS AND DETROIT

St. Louis and Des Moines, St. Louis and Omaha,
St. Louis and Toledo

COMING

A New, Fast Train — Soon a new Diesel-powered 7-car train will provide even faster Wabash service. Watch for it's announcement!

EXTRA COMFORT

the Streamliner "City of St. Louis"

Fast, through coach and sleeping car service between St. Louis and the Pacific Coast. One car all the way—no changes. Overnight service between St. Louis and Denver. Advance reservations Required. No extra fare.

EXTRA CONVENIENCE

A New Escalator for the Wabash Delmar Station In St. Louis

Soon your passengers will have the safety and the convenience of an escalator in the Wabash Delmar Station. If their destination is west-end St. Louis or St. Louis County, route them to the Wabash Delmar Station.

"Follow the Flag" WABASH

TOM M. HAYES, Passenger Traffic Manager
1495 Railway Exchange Bldg., St. Louis, 1, Mo.

WABASH RAILROAD

ANNUAL STATISTICAL AND OUTLOOK NUMBER

JANUARY 4, 1947 ISSUE

ON January 4, 1947 *Railway Age* will publish its famous Annual Statistical and Outlook Number, a railway institution for almost 50 years.

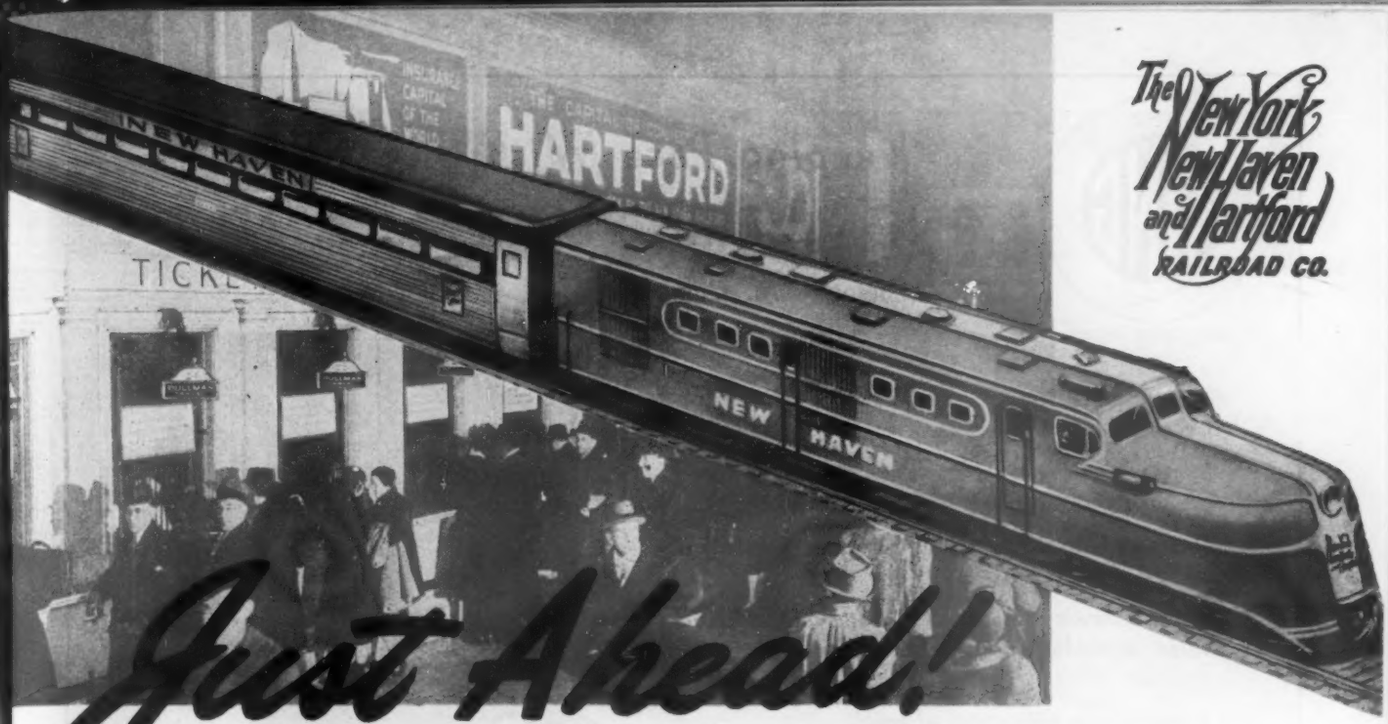
The editorial content of this authoritative Annual will again comprise two sections—a Review Section, presenting an analysis of, and detailed statistical information on, 1946 operations, and an Outlook Section, surveying prospects and trends for the year ahead.

As the first statistical record of the year, and as a compact but thorough reference, the Annual Statistical and Outlook Number of *Railway Age* will possess immediate news-value and retain permanent utility. This annual compilation of review and forecast information, much of it available from no other source, is sought and used in railway, financial and industrial circles throughout North America and in many foreign countries.

To Manufacturers: All these characteristics make it a strong medium for *your* advertising—a springboard for your 1947 railway selling.

CLOSING DATE DECEMBER 16

Railway Age



The New York New Haven and Hartford RAILROAD CO.

Just Ahead!

FINER PASSENGER EQUIPMENT
For Southern New England

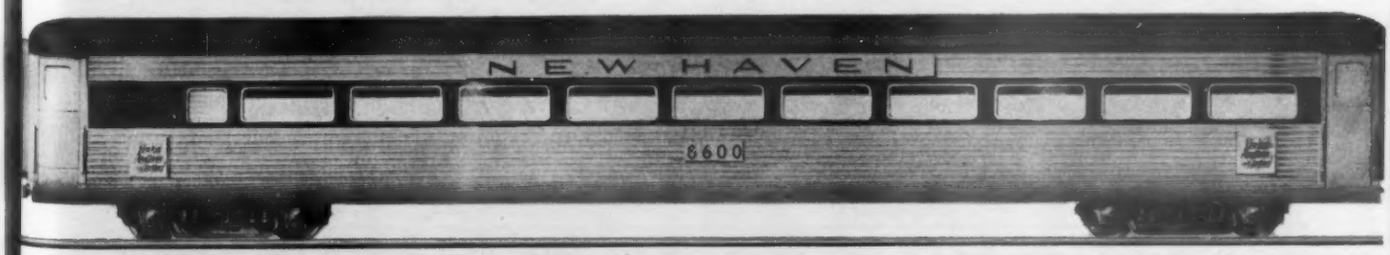
180 new, lightweight, stainless steel passenger cars, costing $13,500,000 to be ready in 1947 . . . 27 new sleeping cars and 45 new Diesel-Electric locomotives also included in new equipment schedule.

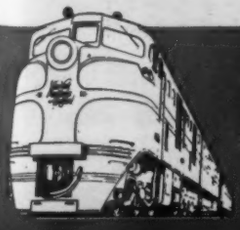
WE are preparing to meet the public's post-war travel urge with the best passenger equipment we have ever operated. First in line is a fleet of modern, stainless steel passenger cars embodying the results of three years' intensive research. Included in this order are 103 coaches, 10 dining cars, 15 grill cars and 52 lounge, parlor and observation cars.

Incorporated in these ultra-modern cars will be such useful and attractive appointments as completely diffused, glareless and shadowless lighting . . . luxurious reclining seats . . . wide, double-pane, clear-view windows . . . electric water coolers . . . and improved rest room facilities. Each coach will be equipped with its own smoking lounge separated by a glass partition from the main section of the car.

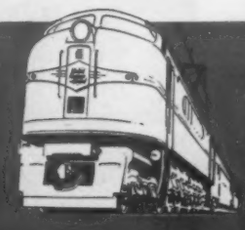
27 new sleeping cars, equipped with the latest smooth-riding devices, are planned for use on the New York-Boston "Owl" and on the "Federal Express" between Boston and Washington. 45 new 1500 horsepower Diesel-Electrics . . . in addition to the 60 modern Diesel-Electric road locomotives previously acquired . . . will, along with modern steam and electric locomotives, assure the utmost versatility in our motive power.

545 passenger trains a day is our average in this thriving New York-New England territory. With convenient schedules and courteous employees, plus new improved equipment, we are preparing to make travel in New England a pleasant adventure for everyone who "goes New Haven".





THE NEW HAVEN R.R.



KING
REG. TRADE MARK

Keeping Pace With PROGRESS!

KING LUBRICATOR Model No. 36

For Locomotive Air Compressors

• • •

Automatic lubrication to steam and air cylinders of locomotive air compressors.

Starts when compressor starts and stops when compressor stops.

Separate reservoirs for steam cylinder and air cylinder oils.

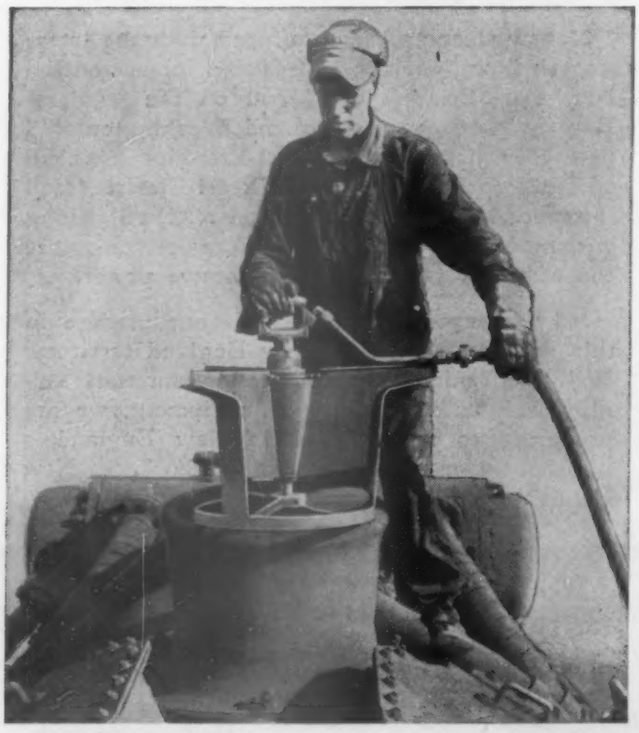
Lower reservoir equipped with heater unit and provision is made for heater in upper reservoir if specified.

Adjustable to wide range of feeds.

Working parts are in a constant bath of oil.

No ratchet mechanism.

THE UNITED STATES METALLIC PACKING CO.
PHILADELPHIA 23 PENNSYLVANIA
Representative in Canada — JOS. ROBB & CO., LTD., Montreal



LOCOMOTIVE DRAFTING IS EASIER WITH A

GALE DRAFTER

The Gale Compressed Air Locomotive Drafter is designed to draft locomotives in the engine houses without utilizing steam. Compact and lightweight, the unit is easy to handle and flexible in operation. The Gale Drafter consists of a specially constructed air motor equipped with a suction-type fan, and provision for cooling the housing makes it possible to remove the drafter from the stack immediately upon completion of its task.

The Gale Locomotive Drafter is inexpensive in first cost and requires a minimum of maintenance.

NATIONAL BOILER WASHING SYSTEMS
80 E. JACKSON BLVD. CHICAGO 4, ILL.

"DON'T PULL THAT WHEEL!"

It Costs You Over 100 Times More to Pull A Wheel and Turn it Than it Does to True a Wheel *IN SERVICE* With WHEEL TRUING BRAKE SHOES!*

* Reg. U. S. Pat. Office

There is only ONE WHEEL TRUING BRAKE SHOE*

WHEEL TRUING BRAKE SHOE CO.

DETROIT — MICHIGAN

Established 1898

Hampered by snow-blockades? —SEND THE JORDAN

Snow-bound track and the Jordan Snow Plow can't get along together—and the snow loses.

Is it drift-filled cuts?—the Jordan has no superior at bucking them clear.

If it's snow-bound yards, the Jordan's huge wings clear two and three tracks at once. For ordinary snow moving, the Jordan Standard Type does the job. In the deep-snow country, the Jordan Type A is called for.

It's an indispensable all-year maintenance tool—in dry weather keeps road bed well drained, easier to maintain.

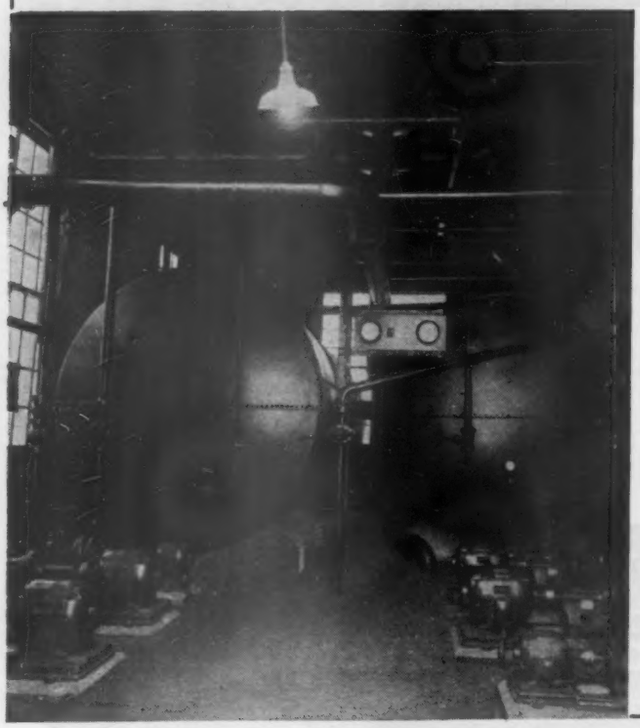
Write for the Jordan Book on your business letterhead.

O. F. JORDAN COMPANY

WALTER J. RILEY, *President*

EAST CHICAGO, INDIANA

MODERN BOILER WASHING EQUIPMENT



National Boiler Washing Systems are modern in every respect and are specifically designed to save time, labor, fuel, water and steam. Each installation is engineered to provide the special requirements needed at your terminal. National Systems are available with either steam pumps or electric driven pumps and are entirely automatic in operation and completely self-sustaining.

Surveys and recommendations are made without charge or obligation to railroads.

NATIONAL

BOILER WASHING SYSTEMS

80 E. JACKSON BLVD.
Chicago 4, Ill.

"MOONEY" QUAD-VALVE CYLINDER HEADS

FOR RAIL CAR ENGINES

Designed to fit—

Models 120, 146 and 148 Winton Engines

Models 660 and 860 Brill Engines

"MOONEY" QUAD-VALVE CYLINDER HEADS—

complete with Valve-Motion—insure

- Increased Power
- Better Fuel Economy
- More Mileage per Overhaul
- Decreased Maintenance Cost
- Better Thermal Efficiency
- Forced Water Circulation directly against and around valve seats

Manufactured by

AUTO ENGINE WORKS (INC.)
349 North Hamline Ave. Saint Paul, Minnesota

Why TURN TIRES or WHEELS?

BEFORE AFTER

DEARBORN Wheel Grinding Brake Shoes

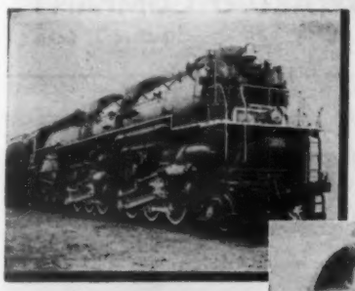
Do the job while locomotive or car is in service, at a saving many times the cost of shoes. We furnish a grinding form to correct all tire and wheel defects.

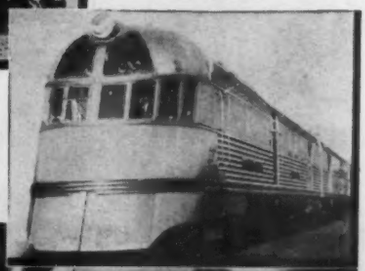
Our shoes do more than keep tires and wheels WITHIN THE LAW. They are formed to A.A.R. standard contour and will restore worn tires and wheels to original shape and contour when new.

DEARBORN RAILWAY SPECIALTY Company

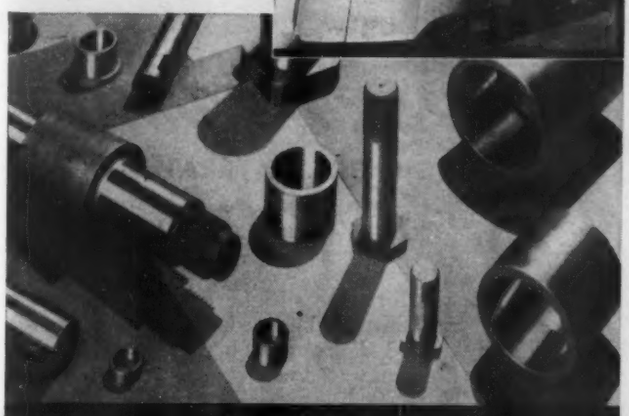
13011 FORD ROAD DEARBORN, MICHIGAN

Specify
EX-CELL-O
Hardened and Ground Steel
PINS and BUSHINGS
for
Diesel and Steam Locomotives and Tenders . . . and Passenger and Freight Cars



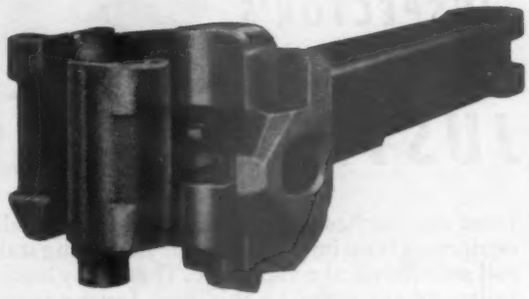


XLO
EX-CELL-O for PRECISION



Railroad Division
EX-CELL-O CORPORATION
DETROIT 6, MICHIGAN
46—11

The A.A.R. STANDARD TYPE H
Tightlock Coupler
and Attachments



Provide Maximum Comfort and Safety

- No slack in coupler contour.
- Noise caused by coupler slack eliminated.
- Coupler interlock provides maximum safety.
- Improved lock anti-creep protection.
- Wear and Maintenance reduced to a minimum.
- Meet A.A.R. Passenger Car Specifications.

Y-25 Y-26 Y-50

Y-25 Y-65

THE BUCKEYE STEEL CASTINGS COMPANY
New York, N. Y. Columbus, Ohio Chicago, Ill.

PLAYING ITS PART IN SAFE, EFFICIENT PASSENGER SERVICE

THE NEW INSPECTOR'S LANTERN BY JUSTRITE.....

From the coaches down to the hand tools, quality equipment is an important factor in making trains roll smoothly and on schedule. That's why leading railroads are ordering this new Justrite Inspectors' Lantern. The quality of Justrite products has long been recognized. And this revolutionary new lantern, specifically designed for inspection work, has already proven "Justrite" for its purpose.

A Wider, Clearer, "Spot-Free" Beam

That's just one of the advantages of this Justrite Double-Header Inspectors' Lantern No. 2121—it provides two different types of light. One light housing is equipped with the newly developed Justrite Honeycomb Lens to furnish the clear wide-spread beam required for accurate car inspection. Throws a circle of clear even light 3 ft. in diameter at 8 ft. distance! The other light housing holds a plain lens—to provide a powerful spot beam for lighting distant objects. And you can have both spread-beam and spot-beam together or separately—each light housing has its own switch and bulb.

Light Can Be Focused At Any Angle

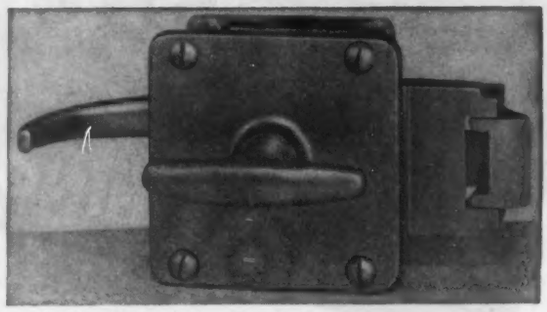
That's another advantage of this new inspectors' lantern. The body of the lantern tilts on the guard base so light can be directed at almost any angle. Light beam is easily focused to give pattern and intensity desired. Lantern is strongly constructed to take hard knocks. Standard bulbs and regular 6-volt lantern battery are used, insuring long service and low operating cost.

Ask your supplier today for a demonstration of these new lanterns

JUSTRITE MANUFACTURING CO.

2063 N. Southport Ave., Dept. D-1, Chicago 14, Ill.

HOWARD
CAR FITTINGS
Streamline Utility for Passenger Cars



HOWARD fittings are illustrated in the CAR BUILDERS' CYCLOPEDIA 1946 edition. Designed for new passenger equipment, they include Locks, Latches, Hinges, Sliding Door Hangers and Tracks, Swing Sash Latches, Baggage Racks and Sash Locks.

Special fittings manufactured from your own designs

JAMES L. HOWARD & COMPANY

438 Asylum St. Hartford 1, Conn.

INTERNATIONAL
HIGH GRADE TREATED
TIES

Plus-value ties for today's higher speeds. Standard A.R.E.A. Specification Ties—sound, full-sized, scientifically treated. Economical because their longer life keeps tie renewals low.

INTERNATIONAL
CREOSOTING AND CONSTRUCTION CO.
Producers of Treated Ties, Poles, Piles, Etc.
Galveston — Beaumont — Texarkana

SUPPLIES FURNISHED

FOR LATEST TYPE OF

Streamline Passenger Train Equipment

RAY W. PREIKSCHAT

8 S. MICHIGAN AVE. CHICAGO 3, ILL.

The Ticket Agents' Favorite

available again

COSMO ticket dater

Unconditionally GUARANTEED

Model 3 illustrated; other types available.

also Joslin CASH FARE RECEIPT HOLDERS

PROMPT DELIVERY

WRITE TODAY

for full information and prices on all models of Ticket Daters, Cash Fare Receipt Holders, Engraved Dies, Ribbons, and other Supplies.

A. D. JOSLIN Mfg. Co.
Manistee, Michigan

NEW Accurate, Fast on the job method for **Cutting & Punching Belts**

CUTS AND PUNCHES ALL TYPES OF BELTS FOR SPLICING

DO THE JOB ON-THE-JOB in one to two minutes! The SAFE-N-EZY Belt Cutter provides a *faster, more accurate* method for preparing all types of belts for splicing. Cuts and punches in single operation to match standard splice fittings. One model especially designed to handle belts for railway car air conditioning and generating equipment. Work can be done at the car, eliminating trips to service shop. This device should be among the emergency tools at every station on your system.

For use on 2" cog V-belts, 1" and 2" solid V-belts, and 4" and 5" flat belts. By simple change same cutter can be used to handle two, three or four bolt coupling assemblies.

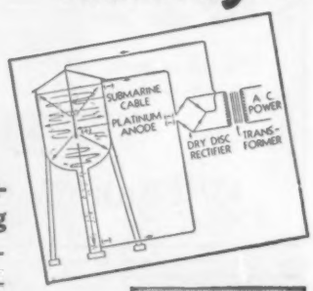
Write today for prices and further details!

SAFE-N-EZY BELT CUTTER

PAXTON-MITCHELL COMPANY
ENGINEERS ● FOUNDERS ● CRAFTSMEN
OFFICES and PLANT ● OMAHA 5, NEBRASKA

RUSTA RESTOR

Prevents Rusting...



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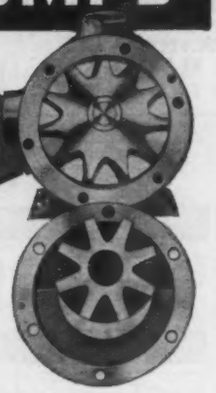

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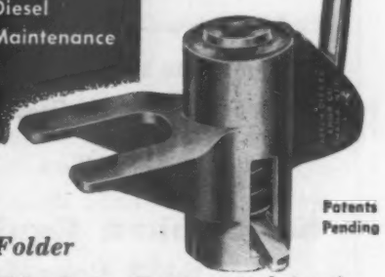

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